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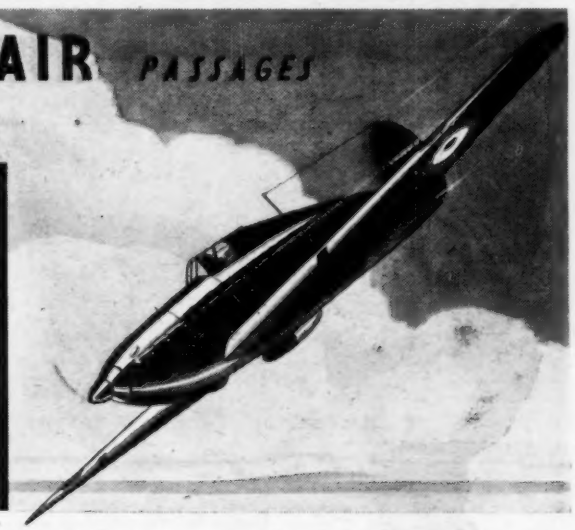

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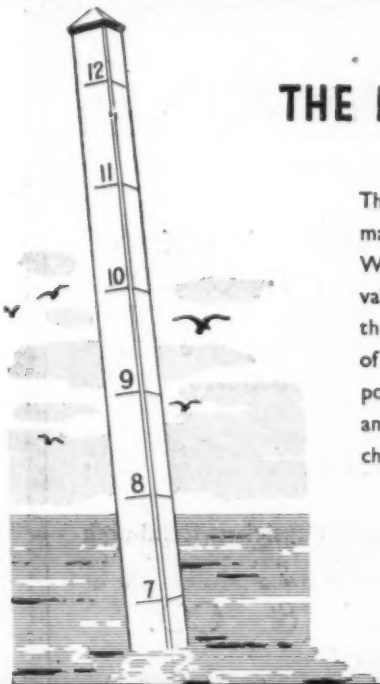

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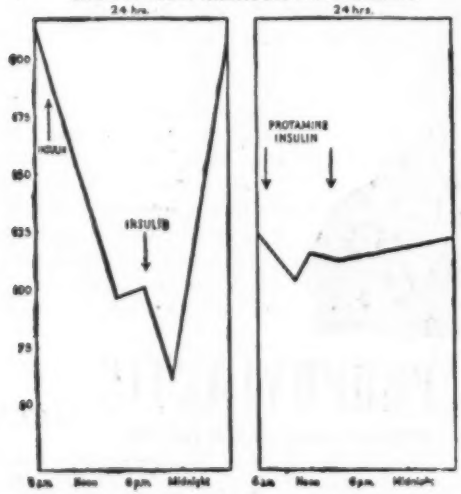

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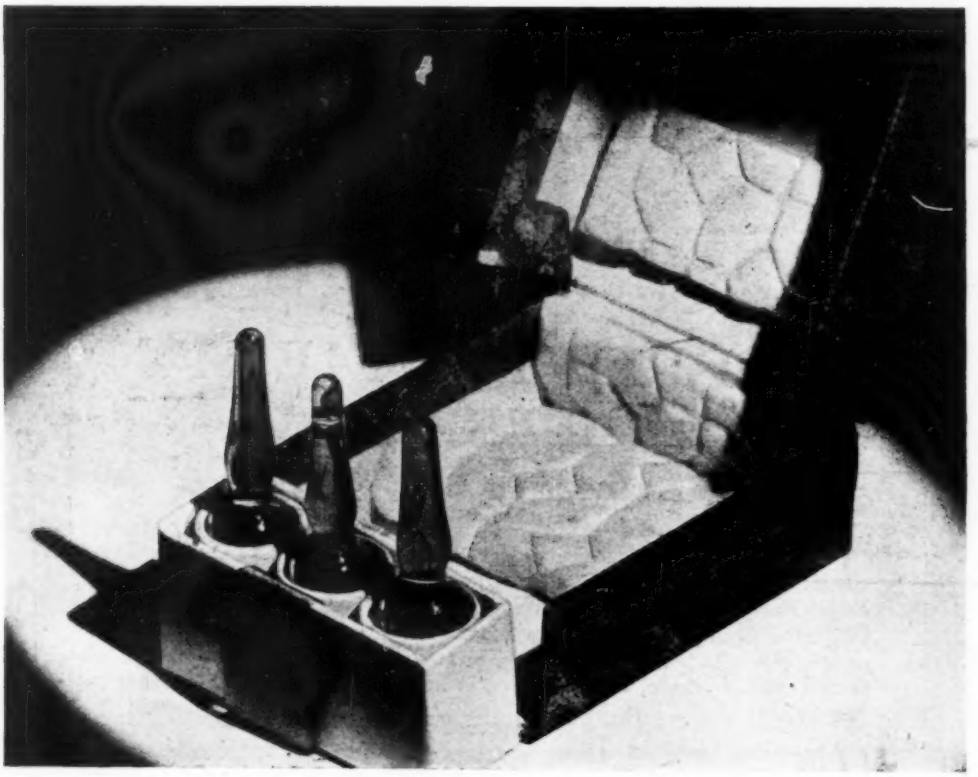

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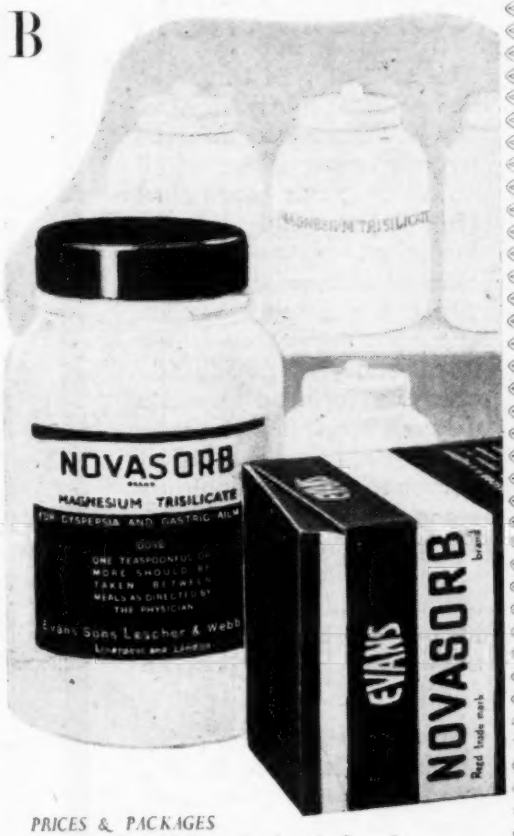

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ORIGINAL ARTICLES

MEDICAL GRADUATION AT CAMBRIDGE

A STATISTICAL NOTE

M. GREENWOOD, D.SC. LOND., F.R.C.P., F.R.S.
A. TELEKY, PH.D.

IN a paper by one of us and Lewis-Faning [1] a comparison was made between the wastage of medical students of London, Oxford and Cambridge Universities. In the comparison "wastage" had the restricted connotation of failure to graduate in medicine in the student's university. We could do no better than this because for London University students we had few and for the senior universities no data of the proportion of entrants on a medical curriculum who never qualified at all. Since 1937 adequate data of the Cambridge medical school have been compiled which we have been permitted to examine. These consist of the students' names and dates of birth, their home country and college, grouped by the year of matriculation from 1923 to 1938. For the students who matriculated in 1923–26 inclusive only the year of the medical qualification is shown; for the later years more details of the medical examinations and of the course of study before the medical examinations are provided.

If we take the entrants of the years 1923–30, numbering 1254, and trace their careers we shall miss a few who eventually qualified, but the statistical importance of those who take more than nine years to reach the Medical Register is not likely to be great, so they may be ignored. Of the 1254 medical students, 193 never qualified at all, 604 (602) graduated in medicine and also obtained a licence or some other medical qualification (the great majority of these qualifications came from the Conjoint Board), 150 (121) graduated without taking a licence, 307 never graduated in medicine but took a licence. These figures include 31 students who graduated in medicine in a university other than Cambridge. The figures in parentheses refer to medical graduations at Cambridge.

In the paper cited it was concluded that wastage, as above defined, was of the same order of magnitude among London and Cambridge university students, about 33·3%. The more exact figures now available confirm this. It appears that of those Cambridge students who qualified about 24% never graduated in medicine. We now have the additional information that 15% of entrants did not qualify at all. The total wastage from the point of view of graduation is thus nearly 40% of the starters. It is then about three to two in favour of a student who desires to graduate in medicine actually doing so. For London we have not such precise information, but in the data used by Greenwood and Lewis-Faning relating to 425 students who had passed the second M.B. 26 never qualified and 149 of the 399 who did qualify did not graduate. So one has for total wastage about 41%.

NUMBERS GRADUATING IN MEDICINE AND NUMBERS QUALIFYING WITHIN VARIOUS PERIODS

Period from matriculation (years)	Graduating in medicine		Qualifying			
			Graduates		Non-graduates	
	No.	%	No.	%	No.	%
5– 6	3	0·4	29	4	5	1·6
6– 7	124	17·2	446	61·7	88	28·5
7– 8	171	23·7	165	22·8	86	27·8
8– 9	176	24·3	52	7·2	54	17·5
9–10	113	15·6	19	2·6	39	12·6
10–	136	18·8	12	1·7	37	12
Total	723	100	723	100	309	100

The table shows the time taken to graduate in medicine at Cambridge; 41·3% succeed within 8 years, more than 33·3% take more than 9 years. It also shows the distribution of time to registration; the 723 students in this part of the table is made up of 602 who took the Conjoint Board's licence as well as the degree and 121 who graduated in medicine but took no licence. Less than a third of the non-graduates reached registration within 7 years, but more than twice as large a proportion of the graduates did so; of the latter only 4·3% took more than 9 years, of the former 24·6%.

A LIBERAL EDUCATION

There is another comparison between the two universities which the new data allow us to make. A discussion is now going on in the *Times* on the importance of a liberal education as a preliminary to the vocational training of medical students. It is not a new discussion and not easily concluded because so few people agree on the definition of educational liberality. In past controversies matters were easier. So long as men believed that the literary remains of Greece and Rome contained all that was necessary for intellectual salvation, it was obvious that liberal education meant a scholarly knowledge of the Greek and Latin languages and literature. That was the ostensible defence of those who successfully opposed admission to the fellowship of the London College of Physicians of persons not doctors of medicine of Oxford or Cambridge throughout the 18th century (see Chaplin, Medicine in England during the Reign of George III, pp. 18–20). Actually it could have been argued in the 18th century that the vocational value of a knowledge of at least Latin was enormous. Without it one could read none of the old and very little of the new technical literature, but when medical books ceased to be written in Latin only the cultural argument was left, and, even from the examinations of the London College of Physicians, compulsory Latin has gone. But there is still a feeling that a young man or woman who has seriously studied some subject not obviously or intrinsically bound up with the technique of a profession is more liberally educated than one who has not.

We shall not inquire whether one ought to feel this, but only whether, as a matter of statistical fact, the proportion of Cambridge students who are liberally educated in this particular sense is really much greater than that of London students. We have no adequate data for London, but it is probably safe to assume that a statistically negligible proportion of the London medical students first graduate in any other faculty than science, and that the science graduates always take physiology or anatomy as a subject. Even these latter are few.

We have particulars of 648 Cambridge medical entrants of the years 1927–30; of these 10 or 1·5% took a tripos other than the natural sciences tripos and only 6 qualified in medicine; 74 took no arts degree and 25 of these did not qualify; 357 took the natural sciences tripos, 207 an ordinary B.A., and of these 21 and 18 respectively did not qualify.

It would have been possible to make a choice of natural sciences tripos subjects not directly relevant to preclinical medical studies, but we do not find that any students have done so. It follows that at Cambridge, as in London, the university training is vocational, so far as concerns the choice of subjects. That this would be so might have been predicted. There has indeed never been a time when a sensible proportion of the undergraduate members of Oxford or Cambridge were not poor men, but the proportion of poor medical students in the 18th century can hardly have been large. At Oxford 10 years from matriculation, at Cambridge 6 were required, and the universities provided hardly any vocational training. So to graduate was a long and relatively expensive business. Dr. Chaplin, in a passage which happily combines loyalty to the London College of Physicians and caution, writes: "The tendency of that education was in the direction of general culture, and accounts for the high order of intellectual capacity which was such a prominent feature of the College of Physicians in those days."

A count of the names in Munk's Roll shows that in the 18th century just under 200 persons were admitted Fellows of the London College of Physicians—not quite two a year. Of these a sensible proportion had not had the advantage of that education the tendency of which was so happy, because it was not very difficult, if one had the

1. Greenwood, M. and Lewis-Faning, *Lancet*, 1937, ii, 277.

necessary influence, to be created a doctor of medicine of Oxford or Cambridge by Royal Mandate. Of the 197 fellows it is possible that the names of 15 are still remembered by educated men who are not historians. As physicians, Mead, Freind, Baker, Baillie, Heberden, Halford; as alienists, Battie and Monro; as scientists, Woodward, Jurin, Pringle and Wollaston; as writers, Arbuthnot, Akenside and Stukeley (the archæologist). Of these, Arbuthnot, Woodward, Mead, Akenside and Pringle were not educated at Oxford or Cambridge. Medical graduation in England was virtually restricted to those medical students who aspired to practise as what the public calls specialists or consultants; the education of general practitioners was wholly vocational. We have not to lament the decline of liberal education for medical students; statistically speaking the proportion of all medical students who received a liberal education 150 years ago was as small as it is now, if by liberal education we mean serious study of any subjects having no direct vocational utility, and much smaller than it is now if we mean the broad-minded treatment of vocational studies.

The pupils of the Hunters in their highly vocational school were in the way of getting an education the tendency of which was at least as happy as that of future fellows of the London College, but there were not many schools as good. If pupils of our senior universities retain their traditional advantage, it will not be because their studies are less vocational than those of the less fortunate students who cannot enjoy the advantages of residence, but because there is time, when trains have not to be caught, to treat vocational subjects liberally.

NEONATAL THRUSH IN A MATERNITY HOSPITAL

G. B. LUDLAM, M.B. EDIN., D.L.O., D.T.M. & H.
LECTURER IN THE DEPARTMENT OF BACTERIOLOGY, UNIVERSITY OF EDINBURGH

J. L. HENDERSON, M.D. EDIN., F.R.C.P.E.
LECTURER, UNIV. DEPT. OF CHILD LIFE AND HEALTH; ASST. PÆDIATRICIAN, SIMPSON MEMORIAL MATERNITY HOSPITAL

THRUSH is universally recognised as a common disease of infancy and is generally regarded as benign. The high incidence in the nurseries of many maternity and infant hospitals, and the considerable number of fatalities from the infection, are not sufficiently appreciated. The following investigation on thrush in the newborn was carried out in the Simpson Memorial Maternity Pavilion of the Royal Infirmary, Edinburgh. The principal objects were to demonstrate the high incidence of the disease, and some of the factors maintaining the endemicity of the infection.

BACTERIOLOGICAL METHODS

Thrush is a specific infection caused by the yeast-like fungus commonly known as *Monilia albicans*. The fungus produces the thrush lesion by infiltrating areas of the buccal mucous membrane with a tangled meshwork of pseudo-mycelial strands, from which clusters of yeast-like cells, known as blastospores, are formed by a process of budding. In the bacteriological part of the investigation, the following methods have been used for the isolation and identification of the fungus.

Collection of specimens.—Specimens were taken from the mouth, hands and fæces of infants. They were obtained from the mouth by swabbing in the usual way, and from the hands by vigorously rubbing a swab soaked in broth in and out of the clenched fist. Fæces were collected from the napkins in sterile containers. Specimens were taken from the vagina and nipples of mothers by swabbing. The nipples were rubbed with a swab soaked in broth. When possible, a drop of colostrum was expressed and taken up at the same time. Samples of pooled breast-milk were also examined. About 10 c.cm. was centrifuged, the supernatant fluid poured off and the sediment retained for cultivation. Specimens were obtained from the throat and fingers of nurses by swabbing. The latter specimens were obtained by vigorously rubbing a swab soaked in broth on the palmar surface of the right thumb and forefinger.

Isolation and identification of M. albicans.—The specimens were inoculated into 1% glucose broth which was incubated at 37° C. for 48 hours. The supernatant fluid was then poured off and a wet preparation of the deposit examined for yeast-like cells. If these were present, a loopful of the deposit was plated on Sabouraud's medium and incubated at 37° C. for 48 hours. A typical colony was replated to ensure purity and the organism maintained on a slope of Sabouraud's medium for further examination.

The organisms isolated were identified as *M. albicans* by their morphology, the appearance of the colonies after 48 hours on a Sabouraud plate, their sugar reactions and agglutination tests with a specific serum. They are budding yeast-like cells (blastospores) which, on corn-meal agar (Benham 1931), yield also a branching mycelium which produces further blastospores in clusters. On Sabouraud's medium the colonies are 1–2 mm. in diameter, heaped-up, circular, greyish-white, creamy in consistence and have little or no mycelial fringe. They emulsify easily in saline.

For sugar reactions, lactose, saccharose, galactose, maltose and raffinose were used in a 1% solution in peptone water, with neutral red as indicator. Each tube was inoculated with a full loopful of a 48-hour nutrient-agar slope culture. The tubes were incubated at 37° C. for 4 days. It was found that acid and gas formation had then reached a maximum and that there was a tendency for the acidity, and especially the gas, to diminish after this time. The reactions of strains of *M. albicans*, *M. parapsilosis*, *M. candida* and *M. krusei* obtained from the National Collection of Type Cultures were determined by the above methods. It was found that the reactions of *M. albicans* were distinctive and agreed with those reported by Benham (1931), Stovall and Buboltz (1932), Martin et al. (1937), and Jones and Martin (1938). The results obtained with the strains of *M. albicans* isolated agreed with those from the National Collection and were as follows: maltose, acid and gas; galactose and saccharose, acid only; lactose and raffinose, no acid or gas. The reaction with saccharose was usually weak and sometimes doubtful. Occasionally, no gas was formed from maltose but repetition of the test always gave the typical result.

For agglutination reactions, Benham's method of producing antisera was followed (Benham 1931). Two 48-hour Sabouraud slope cultures were emulsified in 25 c.cm. of carbol-saline and sterilised by incubation at 37° C. for 5 days; 1 c.cm., 2 c.cm. and 3 c.cm. were injected intravenously into a rabbit on 3 successive days, and this was repeated weekly for 4 weeks. The rabbit was bled a week after the last dose. Agglutination tests were performed with suspensions in saline of 24-hour Sabouraud cultures diluted to match a no. 2 Brown's opacity standard. The test was put up in agglutination tubes in the usual way and the mixtures of suspension and serum were incubated for an hour at 37° C.; the tubes were then shaken vigorously and incubated for another hour, when they were shaken again and left overnight at room temperature. After further shaking the result was read; the end-point was taken as the last tube to show definite granularity to the naked eye. There was a good deal of cross-agglutination with other species of moniliæ—*M. candida*, for instance, agglutinating to the same end-point as *M. albicans*, although not so strongly. Consequently, routine agglutination was abandoned after agglutination to the end-titre had been found in over 40 consecutive strains of moniliæ, which had been identified as *M. albicans* by morphological and cultural appearances and by sugar reactions.

In this series 193 infants have been swabbed, usually repeatedly, and *M. albicans* has been isolated from 70 of them. In only 2 infants have other yeast-like organisms been isolated. One was infected with *M. candida* and the other with a cryptococcus which was also present in the mother's vagina. Neither of these infants developed any lesions. It seems, therefore, that when a yeast-like organism is isolated in the newborn it will rarely be wrong to assume that it is *M. albicans* if it is impracticable to carry the process of identification further.

INCIDENCE

During 1940 a careful lookout was maintained for thrush, and 163 cases were observed. During this period, 2540 infants survived for more than 48 hours. Those who failed to do so have been excluded, since clinical thrush must be exceedingly rare before the third day of life. This gives an incidence of 6·4%. It is desirable, however, to calculate the incidence between the ages of 2 and 10 days, since very few infants are discharged before they are 10 days old and the proportion remaining for a longer time falls rapidly. The incidence was 4·1% for this period. In 1939 there were 168 cases

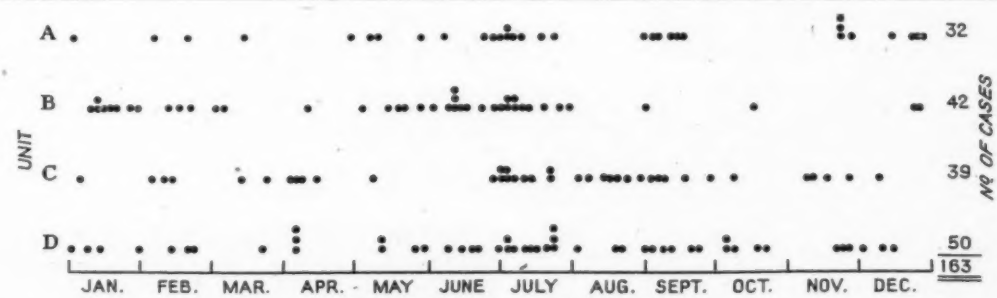

FIG. 1—Distribution of thrush cases in 1940.

of neonatal thrush in the hospital, an incidence of 7·2%. The incidence would be much higher if all the infants developing thrush shortly after discharge could be included.

A group of 60 unselected infants have been investigated by swabbing their mouths at intervals during the first 10 days of life. *M. albicans* was isolated from 11 (18·3%); 8 of these had clinical thrush before they were 10 days old (13·3%); the remaining 3 developed thrush after the 10th day. A further 3 infants in this sample developed thrush before leaving hospital, making a total of 14 cases (23·3%). It is noteworthy that all the infants from whom *M. albicans* was isolated later developed thrush, and that no thrush was ever seen in infants who had recently had a negative swab. It appears that once the fungus has been isolated from the mouth in these newborn infants it is only a matter of time before thrush develops. In many cases, however, the lesions may be very slight and easily missed. It will be observed that the incidence of thrush in this series is much greater than in the purely clinical survey. This can be partly accounted for by the closer examination of the mouths of swabbed infants and by the fact that doubtful lesions, which were confirmed by a cultural check, might otherwise have been missed.

Fig. 1 shows the distribution of the 163 cases of thrush observed in the four obstetrical units of the hospital during 1940. The average infant populations of units A B and C were comparable, while that of D was about half that of the others. Unit D is the suspect and septic unit in which many of the infants are handicapped by a difficult delivery and unhealthy poorly-lactating mothers. These conditions necessitate partial, if not complete, bottle-feeding for most of the infants. The introduction of infection into the nursery by the infants of mothers transferred from the other units is a constant danger. These facts, and a longer stay in hospital, account for the higher incidence in this unit. The cases are fairly uniformly distributed throughout the year, but there is a tendency for them to occur in small groups. The

TABLE I—INCIDENCE OF THRUSH IN INFANTS SURVIVING LONGER THAN 2 DAYS

—	No. of infants	2–10 day period		2 days to time of discharge	
		With thrush	Incidence %	With thrush	Incidence %
Full-term	2318	80	3·5	122	5·2
Premature	222	22	9·9	41	18·5

apparent reappearance of considerable numbers of thrush cases in unit C at the beginning of July, after a long interval, coincided with closer supervision by one of us. This again illustrates the fact that many cases of thrush are missed unless a very close watch is maintained.

Incidence in special groups of infants.—Table I shows the incidence of thrush in full-term and premature infants, diagnosed on clinical examination. Table II shows the incidence of *M. albicans* in the mouth in various groups of infants as determined by swabbing and isolation of the organism. These two tables again show the discrepancy between the results of purely clinical examination and one involving the isolation of the fungus. Nevertheless, both tables show a higher incidence in premature infants and infants that remain longer in hospital. Table II shows that even among full-term breast-fed infants the incidence of infection is considerable by the 10th day of life. It also shows a great increase in the incidence in bottle-fed infants which is similar in the full-term and premature groups. There is no evidence here that prematurity predisposes to thrush. It is clear that an infant may become infected at any time

TABLE II—INCIDENCE OF *M. albicans* IN THE MOUTH, IN VARIOUS GROUPS OF INFANTS

—		Infants	*M. alb.* found	Incidence %
FIRST HOSPITAL				
Premature	Bottle-fed aged 1–2 weeks	27	10	37
	Same infants up to time of discharge	27	18	67
Full-term, aged 8–10 days	Breast-fed	45	5	11
	Partly or wholly bottle-fed	15	6	40
SECOND HOSPITAL				
Full-term, aged 8–10 days	Breast-fed	46	6	13
	Partly or wholly bottle-fed	12	5	42

during its stay in hospital. *M. albicans* has been isolated less than 24 hours after birth, and, on the other hand, from an infant 28 days old, after three previous swabs had been negative.

Epstein (1924) estimated that 54% of the infants between 2 and 6 weeks old in an infants' hospital were infected with *M. albicans*, and Haler (1932) found the organism in 20% of infants on routine swabbing in an infants' hospital. Woodruff and Hesseltine (1938) reported an incidence of thrush of about 1% in the infants of the Chicago Lying-in Hospital. Our figures roughly correspond with those of Epstein and Haler, but are much higher than those given by Woodruff and Hesseltine. This discrepancy can, in part, be attributed to failure to detect cases in the Chicago hospital, as admitted by the authors.

To determine whether the high incidence of thrush in this hospital was exceptional, 58 infants, aged 8–10 days and selected at random over a period of 3 months, were swabbed orally in the nursery of another maternity hospital in Edinburgh. The results obtained (table II) show a remarkable similarity to the incidence in our own hospital.

CLINICAL FEATURES

The mouth of each infant is examined every morning by the sister or staff nurse of the unit and all cases of suspected thrush are reported. Thorough examination of the mouths of a large number of infants requires a good deal of time and patience. A good light is essential. The tongue and every part of the mouth must be carefully inspected. The mouth lesions may vary in size from pin-head spots to large plaques. They are adherent, greyish-white, and may be surrounded by a small hyperæmic zone. The greater part of the buccal mucosa may be inflamed in severe cases and the tongue may be raw red. The plaques are tough and their disintegration on a slide is difficult. The lesions usually multiply rapidly and the tongue and various parts of the mouth

may become thickly coated within 24 hours of their initial appearance. Occasionally we have observed the spontaneous recovery of infants with only a few very small lesions within a day or two.

The mouths of 100 infants with thrush were examined by one of us over a period of 6 months, and the distribution noted at the first examination; the tongue was affected in 87, the palate in 66, the cheeks in 51 and the lips in 48. In half the cases three or four parts of the mouth were affected. Labial lesions are often associated with others on the contiguous part of the gums, but lesions are seldom seen on the under surface of the tongue or the floor of the mouth except in severe cases. The incidence of pharyngeal involvement can only be determined in fatal cases.

Differential diagnosis.—Thrush is often mistaken for regurgitated milk curds or furring of the tongue. Milk curds, unlike thrush colonies, are not adherent and are easily rubbed off. Furring of the tongue is common in the newborn and is often remarkably transient. The colour is usually greyish and the distribution uniform. The coexistence of furring and thrush may cause difficulty, but thrush should always be suspected where the tongue has a granular coating. Involvement of the lingual edges, on which furring is never seen, or the presence of thrush lesions in other parts of the mouth, will dispel any doubt. Small, whitish, fibrous nodules in the hard palate are normally found in many newborn infants and must always be borne in mind. They are usually situated in the median raphe. The presence of the organism can easily be detected by microscopic examination of a fresh scraping teased in a drop of water, but it stands out much more clearly if the scraping is mounted in 10% potassium hydroxide (fig. 2) or methylene-blue. Potassium hydroxide clears the preparation of cellular debris. Methylene-blue stains the epithelial cells and other organisms but leaves the thrush fungus unstained. The demonstration of the organism by staining dried films by Gram's method is more laborious and need not be employed.

The age at onset is shown graphically in fig. 3. It will be observed that only one infant displayed the lesions as early as the 3rd day of life, and that very few cases occurred before the age of 6 days. A rapid rise to a peak at 8 days is followed by a sharp fall. The sharp fall in the incidence after the 8th day can be accounted for by the great reduction in the proportion of infants receiving bottle-feeding after the adequate establishment of lactation at 3–5 days. It was customary at the time of the investigation for all infants to be offered a solution of 5% dextrimaltose in sterile water by bottle during the first few days. Very few infants are discharged before they are 10 days old, but the proportion remaining for a longer time falls rapidly, thus rendering the figures for the age-incidence in older infants incomparable (table III).

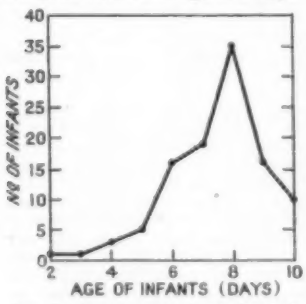

FIG. 3—Age at onset of oral thrush in 106 infants.

CLINICAL EFFECTS

Oral thrush.—Unless extensive, oral thrush does not usually produce harmful effects in mature infants, but in premature infants it often interferes with the appetite and is more likely to have serious consequences. In severe cases with stomatitis the pain on sucking and swallowing renders adequate feeding and nutrition difficult. Ulceration of the buccal mucosa occasionally occurs in these circumstances and pyogenic infection may supervene, as in the following fatal case.

Birth weight of infant 6½ lb. Fed on unsweetened condensed milk from birth. Progress satisfactory until the 10th day when oral thrush appeared. Involvement of the whole of the buccal cavity with acute inflammation of the mucosa soon followed. This caused complete anorexia and necessitated tube-feeding. The oral thrush had almost cleared up within a week with the use of 1% gentian violet in aqueous solution twice daily, but an inflamed mucosa with many suppurating ulcers remained. The baby died a few days later. Autopsy showed that the oral condition and its toxæmic effects had been the cause of death. The fungus had not spread to the pharynx or œsophagus.

Œsophageal thrush.—The occurrence of severe anorexia in a case of oral thrush without much inflammation should always arouse the suspicion of œsophageal involvement, although such a diagnosis cannot be made

FIG. 2—Scraping from an oral thrush lesion cleared in 10% potassium hydroxide. Shows pseudo-mycelium and blastospores. (× 300.)

with certainty. Such a complete degree of anorexia, due to any other obscure condition, is rare in infants who have previously fed satisfactorily. Œsophageal thrush sometimes develops where the oral lesions have been inconspicuous enough to be missed on routine examination of the mouth. This occurred in 3 of the 20 cases of œsophageal thrush summarised in table IV. In 2 further cases, no oral lesions were detected either before death or at autopsy. A provisional diagnosis of thrush œsophagitis is rarely made in such cases, but the condition should always be considered and the fungus looked for in the gastric contents or stools. A pronounced monocytosis is often found in severe cases, and in these persistent regurgitation or vomiting are conspicuous features. In the latter part of the illness, loose, mucoid, greenish stools, indicating the presence of enteritis, and signs of bronchopneumonia, make their appearance.

PATHOLOGY

Of the 163 infants in our series 20 died from various causes. An autopsy was done in 18 cases and the thrush fungus was found to have spread to the pharynx in 8; in 7 of these 8 it had also invaded the œsophagus. The infection had spread to the stomach in 2 cases. During the last four years, 20 cases of thrush œsophagitis have been discovered at autopsy in this hospital. The incidence in infants who died after 48 hours of life was 6·6%. It appeared to be the cause of death in 13 cases. Approximately a quarter of the cases of thrush occurring in this hospital are premature; but three-fifths of the fatal cases with thrush œsophagitis were premature (table IV). If all the fatal cases of thrush œsophagitis resulting from infection in the hospital were known, the incidence would be considerably higher.

In mild cases of pharyngeal and œsophageal thrush the lesions may not be numerous but tend to appear in groups. As elsewhere, they are adherent and associated with some congestion of the mucosa. In severe cases the lesions become confluent, with the formation of plaques and extensive subjacent ulceration. Acute inflammation of the entire mucous membrane of the affected organ occurs in such cases. In the pharynx, the pyriform recesses are usually the most severely affected part, while in the œsophagus the narrowest parts are usually the first involved. In severe cases the œsophagus may be completely lined with a thick pseudomembrane. Similar lesions were seen in the four cases with gastric involvement, but the intervention of death seldom allows the process to advance so far in the stomach. No intestinal lesions were found in this series of 20 cases. Recently, however, a mycotic ulcer was found in the ileum of a premature infant aged 7 weeks in whom no other signs of thrush were seen in the alimentary

TABLE III—AGE AT WHICH LESIONS WERE FIRST OBSERVED IN ALL CASES SEEN DURING 1940

First 10 days	Cases	Second 10 days	Cases	After 20 days	Cases
1	0	11	12	21	4
2	1	12	6	23	2
3	1	13	8	25	1
4	3	14	8	30	2
5	5	15	2	77	1
6	16	16	1		
7	19	17	1		
8	35	18	2		
9	16	19	3		
10	10	20	4		
Totals	106	..	47	..	10

tract. No oral thrush was observed during life but this is not surprising as mild cases often remain undetected. The ulcer was situated about 6 in. from the ileocæcal valve and was about 0·5 cm. in diameter. Jejunal congestion, sometimes with oozing of blood into the lumen of the bowel, is a common terminal feature. It becomes less pronounced on passing down the jejunum and seldom reaches the ileum. Aspiration bronchopneumonia is usually the cause of death.

The thrush fungus may produce lesions in many parts of the body. Invasion of the blood-stream has been observed on several occasions. Ebbs (1938), in his series of 22 cases of fatal thrush œsophagitis in older infants, found numerous small pin-point ulcers in the colon in 2 cases, which he attributed to the thrush infection. The same organism had caused otitis media in 2 others, while vaginitis, balanitis and conjunctivitis were each seen in one instance.

Microscopic examination of the lesions in the œsophagus and stomach confirms the destruction of the epithelium underlying the lesions and shows how deeply the mycelium may penetrate subjacent tissues (fig. 4). The muscularis mucosæ is frequently reached. In one severe case, the filaments had penetrated the muscular coat of the œsophagus, almost reaching the serous surface. Invasion of the submucosal lymphatics usually occurs in cases of deep penetration (fig. 5) and venous invasion is occasionally seen (fig. 6). The thick pseudo-membrane, which may cover the whole surface of the œsophagus in severe cases, consists of polymorphs, bacteria, thrush spores and epithelial debris, supported on a scaffolding of mycelium. The mucous membrane may be entirely destroyed and the pseudo-membrane adherent to the muscularis mucosæ.

In the lungs, thrush spores and mycelium are usually found in the pneumonic exudate, associated with a mixed infection consisting chiefly of coliform bacilli and gram-positive cocci. Mycelial invasion of the bronchial or lung tissues has not been detected in any of the cases of this series. Occasionally, digestion of lung tissue by aspirated gastric juice is the chief histological feature.

SOURCES OF INFECTION

The infant's mouth may be a source of infection both before the appearance of thrush and after recovery from thrush. In our group of 60 unselected infants swabbed at intervals during the first 10 days of life *M. albicans* was isolated from 11. Every infant harbouring the organism developed thrush between 2 and 8 days later. In one case it was possible to fix the incubation period with some certainty, as the organism was isolated on the 1st day of life and thrush developed on the 5th day. A group of 10 infants were swabbed after the lesions had disappeared. In 8 of these the organism could still be isolated; in one of the remaining infants a negative swab was obtained after the disappearance of thrush, but the organism was isolated after another 4 days. In the other, with a negative swab, the moniliæ had been isolated 4 days before the thrush appeared, but could not be isolated when the thrush was present or 4 days after its disappearance. The negative results can be ascribed to routine treatment with 1% gentian violet in aqueous solution. The organism appears to survive for the duration of the infant's stay in hospital in most cases. *M. albicans* was isolated 7 weeks after the disappearance of thrush in one instance and 3 weeks afterwards in another. It seems, however, that the isolation of the organism from an infant that has recovered from thrush does not necessarily imply the onset of thrush in a few days' time, as it does in a recently infected infant.

TABLE V—RELATION OF ORAL TO FÆCAL MONILIASIS

—	Cases	*M. alb.* in fæces
Thrush present	4	4
M. alb. in mouth but no thrush ..	7	4
No *M. alb.* in mouth	9	0

The infant's fæces.—The stools of 20 infants have been examined for *M. albicans*; the results (table V) show a highly significant relationship between the presence of the organism in the fæces and in the mouth. The fungus can evidently pass through the alimentary canal and be excreted in a viable condition.

The infant's hands.—It seemed possible that the infant's hands might become infected from nurses or fomites and the infection be passed to the mouth. A series of swabs was taken from the hands and mouth simultaneously to determine whether the organism could

TABLE IV—PRINCIPAL PATHOLOGICAL FEATURES IN 20 CASES OF THRUSH ŒSOPHAGITIS IN WHICH THE INFANTS DIED

Case	Birth weight	Age when oral thrush first detected (days)	Age at death (days)	Degree of œsophageal thrush	Thrush of stomach	Broncho-pneumonia	Other conditions	Cause of death
	lb. oz.						MATURE INFANTS	
1	9 9	6	10	++		+*		Thrush
2	8 4	10	12	+		+	Omphalitis and septicæmia (strep.)	Septicæmia
3	7 8	8	15	+++		–	Septicæmia (staph.)	,,
4	6 11	15	17	++	+	+	Jejunal and ileal congestion	Thrush
5	6 6	8	9	+++	+	+	Epidemic bronchitis; Jejunal congestion	,,
6	5 14	7	35	+		+	Intermittent volvulus	Volvulus
7	5 10	4	10	+++		+	—	Thrush
8	5 9	9	15	++		+	—	,,
							PREMATURE INFANTS	
9	5 7	No record	14	++		+	Jejunal congestion	Thrush
10	5 0	15	31	+++		+	—	,,
11	4 14	8	14	++		+	Jejunal congestion and hæmorrhage	,,
12	4 10	No record	15	+		–	Meningeal sinus thrombosis	Sinus thrombosis
13	4 4	8	9	+		+	—	Thrush
14	4 2	No record	15	+		+	—	,,
15	4 2	7	8	++		+	Epidemic gastro-enteritis	Gastro-enteritis
16	4 1	12	17	+++	+	+	Generalised œdema; Jejunal congestion	Thrush
17	3 14	8	11	++		–	Jejunal congestion	,,
18	3 13	No record	4	+		+*	Intraventricular hæmorrhage	Cerebral hæmorrhage
19	3 12	7	12	+		+	Subdural hæmorrhage	,, ,,
20	3 10	No record	15	+++	+	–	Intraventricular hæmorrhage	Thrush

* Staphylococcal

ever be isolated from the hands before the mouth. No evidence of this was found. Negative mouth swabs were associated with negative hand swabs in 11 instances, but 9 out of 18 infants with positive mouth swabs had positive hand swabs. These results show that an infant with an infected mouth may readily spread the infection to objects within reach of its hands.

The nurse.—It appears to be unusual for the skin to harbour *M. albicans* except in definite monilial lesions. Benham and Hopkins (1933) were unable to isolate *M. albicans* from the fingers of 100 adults, although it was found in the alimentary canal of 18 of them. Other workers have found the organism in the apparently healthy adult throat. Todd (1937) isolated it from the mouth or throat of 14% of 1000 adults. It seems possible, therefore, that at least a few cases of thrush may be caused by infection from the throat of the mother or nurse. Throat swabs of 60 nurses were examined for *M. albicans*; 20 (33%) gave a positive result. This high incidence may possibly be the result of infection of the nurses from the infants. Masks are worn during ward-work, so that droplet infection from the nurse's throat should be rare. Contamination of her hands from her throat is perhaps more likely. The fingers of 42 nurses were swabbed, usually when bottle-feeding infants, and *M. albicans* was isolated 3 times. Recollection of the greater amount of handling of bottle-fed infants will emphasise the significance of this experiment, particularly as the contamination of the hands is probably transient. It shows that infection of the hands of nurses on nursery duty with this organism is common.

The mother.—Since Haussmann (1875) reported fungus spores in the mouths of newborn infants whose mothers were suffering from a fungal vaginitis a number of workers have stressed the possibility of infants being infected in this way.

Woodruff and Hesseltine (1938) give a useful review of the relevant literature. Witkowski (1935) has shown that, in general, the oral flora, shortly after birth, resembles that of the vagina. Hesseltine et al. (1934) produced oral thrush with pure cultures of vaginal moniliæ. This has been confirmed by Bland et al. (1937). Woodruff and Hesseltine (1938) found an incidence of thrush of 21% among the infants of mothers with vaginal mycosis, compared with about 1% for the general infant population of the hospital. Liston and Cruickshank (1940), working in the antenatal department of this hospital, found that 25% of the women attending a leucorrhœa clinic were suffering from vaginal thrush.

To determine to what extent vaginal infection may be responsible for the high incidence of thrush in this hospital, the vagina was swabbed in 50 unselected women during the first stage of labour. The infants' mouths were swabbed on the first day, the fourth or fifth day and the seventh or eighth day. Table VI shows that 20% of the women had a vaginal infection but that there

TABLE VI—RELATION OF ORAL MONILIASIS IN THE INFANT TO VAGINAL MONILIASIS IN THE MOTHER

—	Cases	*M. alb.* in infant's mouth in first 8 days
M. alb. in mother's vagina ..	10	2
No *M. alb.*	40	5

was no significant difference in the incidence of infection between their infants and those of the control group. It is clear that not more than 2 out of the 7 cases of monilial infection could have resulted from contamination from the vagina. In one of these 2 cases the organism was isolated on the first day of life and it seems probable that this case, at least, was caused by vaginal infection. Bland et al. (1937) have noted monilial lesions of the nipples and adjoining part of the breast in women with vaginal mycosis. Such lesions, presumably, could produce thrush in the infant, but as they do not appear to be common they could only cause occasional cases. The nipples of 42 of the above women were swabbed before the infant had been put to the breast, to avoid contamination of them by the infant. No moniliæ were isolated. This site, therefore, seems to be an almost negligible source of infection.

TABLE VII—INCIDENCE OF ORAL MONILIASIS BEFORE AND AFTER BOILING POOLED BREAST-MILK

—	No. of infants (premature)	*M. alb.* present	Incidence %
Milk unboiled	21	18	86
Milk boiled			
(*a*) approx. 2 months after boiling was begun ..	32	21	66
(*b*) approx. 10 months after boiling was begun ..	22	9	41

Pooled breast-milk.—It is the routine in the hospital to pool the breast-milk of those mothers who have an excess, or are unable to feed their infants directly from the breast. This milk is given to most of the bottle-fed infants, and nearly all the premature infants are fed in this way. In the earlier part of the investigation it was not boiled. Attempts were made to culture the organism from samples of this unboiled pooled milk, for it was considered likely that milk contributed to the pool by a woman nursing an infant with thrush would become infected from her nipples. It was isolated in 5 out of 10 samples taken at weekly intervals. Since boiling destroys the organism in a few seconds it was hoped that routine boiling of the pooled breast-milk would lead to a definite fall in the incidence of infection. Table VII shows the incidence of infection among premature infants before and after the milk was boiled. There is a highly significant difference between the first and third groups of infants, suggesting that the boiling

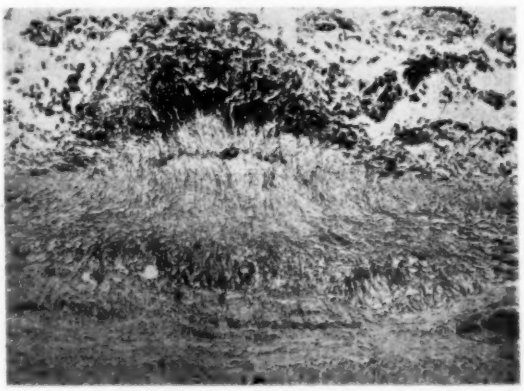

FIG. 4—Section of an œsophageal thrush lesion from case 4 showing the raised lesion, the ulcerated epithelium and the filaments diverging and penetrating almost to the muscular coat. Stained gram and neutral red. (× 50.)

may have lowered the incidence of infection. Nevertheless, it is clear that the infection is still very common and that there are other important methods of spread.

Air-borne infection.—The capacity of an infant to produce infected droplets, when screaming, has been tested by incubating a blood-agar plate that had been held 6–8 in. from the mouth while the infant screamed 50 times. This investigation has been carried out with 12 infants. An average of less than 1 colony per infant has been obtained. Experiments have also been carried out to determine how often *M. albicans* could be isolated from the air of the nurseries; 17 Sabouraud agar plates were exposed in the nurseries and 6 in the changing rooms for 4 hours. The plates were then incubated at 37° C. for 48 hours in a moist chamber. All suspicious colonies were filmed, and colonies of yeast-like organisms were examined further by the methods already described. The only plate on which a colony of *M. albicans* was found had been exposed in a changing room. Another 6 plates of Sabouraud broth were exposed in the nurseries for 18 hours. The broth was then made up to its original volume with sterile water and incubated for 48 hours. *M. albicans* could not be isolated from any of these plates. These experiments provide no evidence that

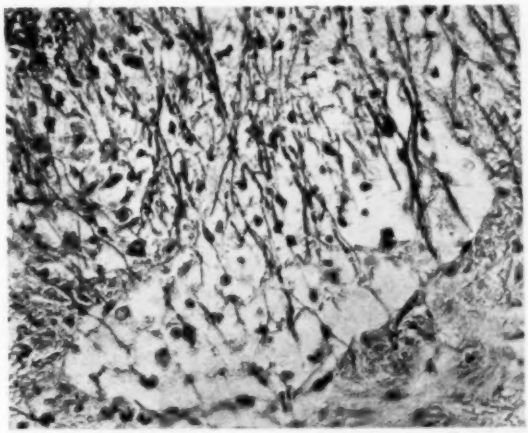

FIG. 5—Œsophagus, showing the invasion of a submucosal lymphatic by mycelial strands. Stained gram and neutral red. (× 375.)

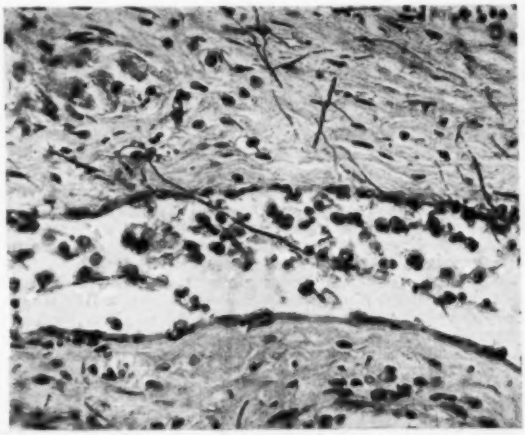

FIG. 6—Stomach, showing the invasion of a vein in the mucous membrane by filaments of the thrush fungus. Stained gram and neutral red. (× 375.)

air-borne infection is an important factor in the spread of thrush.

PROPHYLAXIS

The impression that trauma of the buccal mucosa predisposes to thrush is still widely held. We have not been able to adduce any evidence in support of this conception. In a group of healthy infants it has been shown that thrush developed within a few days in every infant from whom *M. albicans* had been isolated. The introduction of the organism into the mouth may not always cause thrush but it appears to do so in the great majority of cases. This is not surprising when one recalls th efact that conditions in the mouth of the young infant favour the growth of the thrush fungus. The principal reasons for this are the acidity of the saliva and the use of fermentable sugars in artificial feeds. The saliva of infants in the first few weeks has a higher acidity than at any other time of life. The normal pH in the neonatal period is about 5·2 (Thomson 1941), which approximates closely to the optimum pH for the thrush fungus. Sucrose, dextrimaltose and glucose are often used in artificial feeds instead of lactose which is more expensive; but, unlike lactose, they are all fermented by the thrush fungus. Yet the use of lactose does not seem to influence, appreciably, the incidence of oral thrush in the nurseries.

Early diagnosis is one of the most effective ways of preventing the dissemination of infection. In our experience, many cases of thrush remain undiagnosed until the mouth becomes severely affected. The principal causes of this delay are the difficulty in examining an infant's mouth thoroughly, ignorance of the clinical features of the disease, and uncertainty about the differential diagnosis in the early stages. The prevalent belief among nurses that thrush is a "disease of dirt," and its occurrence a stigma on a nurse's work, is unfortunate, for it often causes some reluctance to admit the presence of the condition. While there is an element of truth in this conception, we wish to emphasise that the disease may flourish where there is a good standard of ordinary cleanliness. Its control depends on much the same factors as control of the dysenteric diseases and requires an equally high standard of nursing technique.

The infectivity of infants is greatest when patches of thrush are present and the monilial cells are most numerous. The organisms are less numerous during the incubation period and after the disappearance of the lesions. If the thrush is thoroughly treated as soon as it is detected, the infectivity of the mouth will be greatly diminished, and early isolation of the infant will prevent spread of infection at the most infectious period. After the thrush has been cured, isolation should be maintained until the infant's discharge from hospital, or until a negative swab is obtained, as the organism usually persists in the mouth until discharge. It has been demonstrated how an infant with oral moniliasis may infect its clothes and anything with which it makes contact, by means of its hands, regurgitated matter, vomitus and fæces. The hands of a nurse tending such an infant can scarcely fail to become infected with moniliæ. The much higher incidence of thrush in bottle-fed infants can be accounted for by contamination of the feeding utensils with moniliæ from nurses' hands and by the greater amount of handling.

A mother may infect her infant from the vagina during birth or from the nipple when it is fed. We have shown that only a small proportion of the cases of thrush in this hospital can be attributed to these modes of infection. A mother is much more likely to be a medium of infection than the source, for if her breast-fed infant should harbour moniliæ in its mouth her nipples will become infected, and if her surplus milk is added to the pool it will probably carry the organism and thus disseminate the infection. The routine boiling of pooled breast-milk to eliminate this likely channel of infection is, therefore, essential. Although elimination of the spread of the infection by a very efficient nursing technique would effect a great reduction in the incidence of the disease, a few sporadic cases might still be expected from infection in the mother's vagina, and perhaps from pharyngeal and fæcal monilial carriers among nurses and mothers.

Low resistance is the principal cause of the high morbidity-rate from infection in the early weeks of life. Organisms which cease to be a serious menace after the first few weeks, such as coliform bacilli and *M. albicans*, account for much of the morbidity and mortality from infection in the neonatal period. Although it is generally conceded that young infants run great risks from infection in maternity and infants' hospitals, adequate preventive measures have not been seriously undertaken in this country. Experience has taught us that a low rate of neonatal infection in maternity hospitals can only be maintained by making cross-infection virtually impossible. In many maternity hospitals at the present time the maintenance of a uniformly high standard of barrier nursing in nurseries seems to us impracticable for the following reasons:

1. The proportion of the available space allotted to the nurseries in many maternity hospitals is ridiculously small. The resultant overcrowding facilitates cross-infection and renders efficient barrier nursing impossible.

2. Nursery staffing usually proves to be inadequate when the number of patients exceeds the average. When extra work has to be done in the same time, the inevitable result is a breakdown in the rigid routine.

3. Although qualified in general nursing, most nurses in the principal maternity hospitals are pupil midwives who are inexperienced in the care of infants.

4. The inexperienced fail to realise how apparently trivial infections may be disastrous in the newborn. They often

regard extreme care, the necessity for which is too often only associated with operating-theatres (McNeil 1940), as unnecessary fussiness.

5. In the course of their training these nurses are frequently transferred from one unit to another, which necessitates frequent changes in the nursery staff. The nursing routine is much more likely to break down with beginners than with a more permanent staff.

Although dispersal of infants in small units with or near their mothers would facilitate efficient barrier nursing and greatly reduce the spread of infection, cubicle nursing appears to be the ideal method. The material barrier is a constant reminder of the necessity for care and renders a routine much easier to carry out efficiently, while the entire nursing of an infant within its own cubicle greatly diminishes the possibility of cross-infection. Cubicle nursing has been instituted in some maternity hospitals in the U.S.A. with great success (Cron et al. 1940). It has greatly reduced the incidence of infection and eliminated epidemics of gastro-enteritis, the most deadly of all neonatal infections. We realise that this method of nursing requires a larger nursing staff, but no obstacle should be insurmountable when the sure reward would be the saving of many hundreds of newborn infants who die from preventable infection in the maternity hospitals of this country every year.

CONCLUSIONS

A high incidence of thrush has been found on routine clinical examination of the infants in a maternity hospital. Closer observation, especially when accompanied by bacteriological examination, gave a much higher incidence, showing that many cases of thrush were being missed. The incidence was much higher in bottle-fed infants and infants remaining a long time in hospital. These factors account for the very high incidence in premature infants. There was no evidence that local trauma, debility or prematurity predisposed to thrush. The distribution of cases during the year was fairly uniform, but there was a tendency for cases to occur in small groups. A similar incidence has been found in another maternity hospital.

The causal organism, *Monilia albicans*, can be isolated several days before the onset of the lesions. It usually persists after the lesions have disappeared, but this may be prevented by efficient local treatment. Isolation must, therefore, continue until discharge, unless a negative swab has been obtained. *M. albicans* can be isolated from the fæces of most infants with oral infection and also from the hands of 50% of infected infants.

Although *M. albicans* was not uncommonly found in the mother's vagina, there was no significant relationship between vaginal infection and infection in the infant. This is probably due to any relationship being overshadowed by more important sources of infection.

M. albicans was isolated from the throat in a third of the nurses and was found on the fingers of a few. Thus the nurse is important as a potential source of infection. The organism was found in a high proportion of samples of pooled breast-milk used for bottle-fed infants. There was a fall in the incidence of thrush after heating of this milk was adopted, but it still remained high.

The principal causes of the high incidence of thrush are: overcrowding in the nurseries; failure of the present nursing technique to prevent spread from infant to infant; and failure to make an early diagnosis with resultant delay in isolation and treatment. The use of unheated, pooled breast-milk is also a factor in the spread of infection. Air-borne infection appears to be of little or no importance.

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AMNIOPLASTIN FOR ADHERENT DIGITAL FLEXOR TENDONS

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ADHESIONS between the digital flexor tendons and their sheaths commonly cause stiffness of the affected fingers after suppurative tenosynovitis, suture of cut tendons, severe burns of hand and even long disuse. When adhesions are slight they may be broken down by such physiotherapeutic methods as wax baths, active exercises, potassium-iodide ionisation and manipulation. Dense adhesions cause severe disability, often necessitating amputation of the affected finger. After suppurative tenosynovitis the adhesions are usually dense and there is a variable amount of tendon slough. In most cases the finger is crippled. Little has been written about attempts to mobilise such fingers, but Penfield, Humphreys and Chao (1940), and Kohnstam (1941) have suggested the use of "amnioplastin" in the prevention of adhesions round injured tendons.

Human amnion is a fine membrane composed of a few layers of mesenchymal stroma covered by a single layer of entoderm. From it amnioplastin is prepared by the method of Penfield, Humphreys and Chao (1940), and Penfield (1940)—washing the membrane to remove all blood and mucus, immersing it in 70% alcohol, drying it in sheets, and sterilising it by boiling for 20 min. in distilled water. It is then washed in sterile normal saline in which it is kept for 20–30 min. before use. The final product is a thin, acellular, transparent pliable membrane. Using amnioplastin in experimental brain wounds in cats, Penfield and his colleagues were successful in preventing adhesions, and the results in their human cases have so far been good. Lambert Rogers (1941) has reported successful results with it in the treatment of peripheral nerve injuries, while Law and Philip (1941) reported its use as a conjunctival graft. The object of this paper is to illustrate the use of amnioplastin in mobilising tendons fixed by adhesions following sheath infection.

CASE 1

A scientific glass-blower reported on April 22, 1941, a week after injuring his left ring finger at work. An instrument had caused a punctured wound in the centre of the volar surface at the level of the neck of the proximal phalanx. A few days later he had wrenched the finger while alighting from a tram. The finger had been dressed at work and a thin discharge had been noted for a few days. The wound was found to be healed and there was no inflammatory reaction. Passive movement at the metacarpo-phalangeal (m.p.) and inter-phalangeal (i.p.) joints was full; active movement at the m.p. joint was full, at the proximal i.p. joint 180°–165° and at the distal i.p. joint nil. The power of flexion was very weak. Slight wasting of all the soft tissues was apparent.

On May 5, a general anæsthetic was given and a small rubber tourniquet applied at the proximal end of the ring finger. The damaged tendons were exposed by an antero-lateral incision on the ulnar side and it was found that the anterior wall of the sheath was reddened and adherent to the tendons for almost an inch distal to the original wound. When the scarred sheath was removed the extent of tendon

DRS. LUDLAM AND HENDERSON: REFERENCES

Benham, R. W. (1931) *J. infect. Dis.* **49**, 183.
— and Hopkins, A. McH. (1933) *Arch. Derm. Syph., N.Y.* **28**, 532.
Bland, P. B., Rakoff, A. E. and Pincus, I. J. (1937) *Ibid*, **36**, 760.
Cron, R. S., Shutter, H. W. and Lahmann, A. H. (1940) *Amer. J. Obstet. Gynec.* **40**, 88.
Ebbs, J. H. (1938) *Arch. Dis. Childh.* **13**, 211.
Epstein, B. (1924) *Jb. Kinderheilk.* **104**, 129.
Haler, D. H. (1932) *Brit. med. J.* **1**, 1052.
Haussmann, D. (1875) Parasites des organes sexuels femelles de l'homme et de quelques animaux, Paris.
Hesseltine, H. C., Borts, I. C. and Plass, E. D. (1934) *Amer. J. Obstet. Gynec.* **27**, 112.
Jones, C. P. and Martin, D. S. (1938) *Ibid*, **35**, 98.
Liston, W. G. and Cruickshank, L. G. (1940) *Edinb. med. J.* **47**, 369.
Martin, D. S., Jones, C. P., Yao, K. F. and Lee, L. E. (1937) *J. Bact.* **34**, 99.
McNeil, C. (1940) *Lancet*, **i**, 819.
Stovall, W. D. and Buholz, A. A. (1932) *J. infect. Dis.* **50**, 73.
Thomson, J. (1941) in the press.
Todd, R. L. (1937) *Amer. J. Hyg.* **25**, 212.
Witkowski, R. (1935) *Zbl. Bakt.* **133**, 334.
Woodruff, P. W. and Hesseltine, H. C. (1938) *Amer. J. Obstet. Gynec.* **36**, 467.

damage was examined. At the level of the punctured wound the profundus tendon and the ulnar slip of the sublimis had been completely torn; the distal fragments were small. The intact radial half of sublimis was slightly adherent posteriorly and it was easily mobilised. One layer of amnioplastin was inserted deep to the tendon and another laid on its superficial surface. The skin was closed with silk sutures and the finger firmly bandaged before removing the tourniquet. A light plaster-of-paris splint held the finger in slight flexion.

There was slight reddening of the skin edges for a few days after operation, otherwise healing was uneventful and active movement was begun after two weeks. Six weeks after operation the finger appeared normal and power had improved so much that he could use this finger for playing the piano. There was no impairment of sensation and full passive movement. Active movement at the m.p. joint was full, at the proximal i.p. joint 180°–160° and at the distal i.p. joint nil. Three months after operation, power had further improved and active movement at the proximal i.p. joint had increased to 180°–150°. The scar was supple and there was no evidence of adhesions in the deep tissues. The wasting of soft tissues was much less.

CASE 2

On Jan. 1, 1941, a lad of 15 caught his right little finger in a machine at work and sustained an oblique laceration of almost the whole volar surface, as far as the base of the terminal phalanx. There was gross contamination and the profundus tendon was ruptured at the distal i.p. joint. Under general anæsthesia and tourniquet débridement was carried out and the wound treated by the Winnett Orr method. Only slight infection developed and healing was complete in four weeks. At that time movement at the m.p. joint was full, at the proximal i.p. joint 180°–120°, at the distal i.p. joint nil. Power was poor. He was given a course of wax baths and exercises, and two weeks later, while power had improved, movement was limited to: m.p. joint full, proximal i.p. 150°–90°. At this stage he went back to work and was not seen again until five months after the accident, when the little finger was found to be acutely flexed by dense scar tissue.

On June 28, under general anæsthesia and tourniquet, the scar was excised and found to involve the anterior wall of the digital sheath and the digital nerves. Tendon and nerves were dissected free. The tendon was not adherent to the posterior wall of the sheath and moved freely, but full extension was limited by tension of the tendon. The range of extension was increased by flexing the wrist. Amnioplastin was applied round the tendons and nerves, sulphanilamide powder sprayed in the wound and a full thickness graft from the right thigh applied and sutured in position. The finger was splinted in extension and a short course of sulphanilamide given by mouth (gr. 7½ t.d.s. for three days). The wound was quite clean when examined after five days and the graft seemed to be taking, but ten days later there was a slight discharge of sero-pus round the edges and some crusting. The infection was clear in two weeks and wax baths and active exercises were begun. Potassium iodide ionisation was given later and the finger kept splinted at night.

Three months after the second operation, power in the finger was good but the graft had become partially fibrosed, producing a contracture which interfered with the patient's power of gripping tools at work. Movement at the joints was now: m.p. 180°–100°, proximal i.p. 135°–90°. The terminal i.p. joint was straight and immobile. The scar tissue did not seem to be adherent to the underlying tendon. On Aug. 22, under general anæsthesia and tourniquet, the scar was again excised. The amnioplastin was still present as a thin transparent gelatinous membrane from which the scar tissue was easily separated. Through it the tendon could be seen moving freely and the finger could now be straightened almost completely. The tourniquet was loosened for a moment and some bleeding occurred at the margins of the amnioplastin, showing that it was being vascularised. The wound margins were soft except at the distal end, where the soft tissues were tacked down to bone. These tissues were dissected free and small piece of amnioplastin tucked underneath. Sulphanilamide powder was sprayed in the wound and a full thickness graft from the abdomen was applied and stitched in position. The finger was splinted in extension and sulphanilamide (gr. 7½ t.d.s.) given by mouth for three days.

Slight sepsis occurred at the distal end but soon cleared up, and again there was some fibrosis of the graft, mainly at the edges. Wax baths, active exercises, potassium-iodide ionisation and night splinting were all given. Two months after the last operation he had good power in the finger, and full movement at the m.p. and proximal i.p. joints. There was no evidence of adhesion between the graft and the tendon and sensation in the finger was normal.

CASE 3

In February, 1941, a woman of 42 had a suppurative tenosynovitis of the flexor tendons of the left middle finger, spreading to involve the ulnar bursa, thenar and mid-palmar spaces. Healing was complete at the end of April and a course of wax baths and exercises was given. When seen in June she had partial stiffness of all the fingers, of which the middle finger was the most troublesome because it was very stiff and flexed by scar tissue. The finger was wasted and there was a firm scar down the middle of the volar surface extending proximally well into the palm. Though sensation was normal there was little power in the finger and movements at the joints were: m.p. 165°–150°, proximal i.p. 150°–145°, and distal i.p. 180°–175°. X ray showed some decalcification, but the joints were clear.

On June 24, under general anæsthesia and tourniquet, the scar on the middle finger and distal part of palm was excised. In place of the anterior sheath wall there was a dense band of fibrous tissue binding the tendons down, and when this was removed both tendons moved freely. The finger could not be straightened, however, and the obstruction seemed to be in the interphalangeal joints. Gentle manipulation of the joints was carried out. Unfortunately the limits of passive movement were not recorded at the time but there seemed to be about half the normal range. Amnioplastin was applied round the tendons and the skin sutured with silk. There was a small skin defect at the proximal end of the finger and this was covered with a full thickness graft from the thigh and sutured in position. The finger was splinted in the position of fullest possible extension and sulphanilamide (gr. 7½ t.d.s.) given by mouth for three days. There was slight localised sepsis for a few days round the graft but in ten days healing was complete and wax baths and exercises were begun.

Power and mobility have steadily increased and on Oct. 18 power was good, movement at the joints was: m.p. 165°–110°, proximal i.p. 180°–110°, and distal i.p. 180°–160°. There was no adhesion of the scar to the deep tissues but the graft was partially fibrosed. The wasting showed definite improvement.

CASE 4

In January, 1941, a woman of 53 had a severe pulp infection of the left thumb which spread to cause necrosis of most of the terminal phalanx, tenosynovitis of the flexor tendons and a small abscess in the thenar space. After incision and drainage the tendon was said to have sloughed. When seen in May, the finger had healed and there was a dense inverted scar down the middle of the volar surface, extending on to the thenar muscles. There was slight movement at the m.p. joint and none at the i.p. joint. Wax baths and active exercises improved the power but there was no increase in movement and gripping was feeble. X ray showed the destruction of most of the terminal phalanx and i.p. joint. The m.p. joint was clear.

On Aug. 18, under general anæsthesia and tourniquet, the scar was excised and a few remnants of flexor pollicis longus tendon found firmly bound down by scar tissue. The scar tissue was removed and the tendon mobilised. About 30° movement was now possible at the m.p. joint. Amnioplastin was placed deep and superficial to the tendon and sulphanilamide sprayed in the wound. The skin was closed with silk sutures. Sulphanilamide (gr. 7½ t.d.s.) was given by mouth for three days.

Healing was uneventful and movement was begun in twelve days. Three weeks after operation power in the thumb had much improved, especially in opposition. Movement at the m.p. joint was 170°–135°. After two months the range of movement was the same but power had increased. The scar was not adherent to the deep tissues. There was a decided increase in subcutaneous tissues, giving the thumb a much less scarred and wasted appearance.

DISCUSSION

Each of these patients complained of a stiff and useless finger. The cause of the stiffness was complex and varied in each case, but the main factors were: (1) peritendinous adhesions; (2) periarticular adhesions; and (3) scarring and contracture of the superficial tissues. In addition partial tendon loss accounted for some of the weakness.

Contracture of the superficial tissues was remedied by excision of the scar followed by grafting. Full thickness dissection grafts from either the abdominal wall or the anteromedial aspect of the thigh were used and stitched in position. Since amnioplastin formed an avascular bed these grafts were not altogether successful and became partially fibrosed. In a later case I have attempted to surmount this difficulty by covering the amnioplastin with a flap of skin from the side of the wound. An incision was made parallel to the length of the wound edge and curving away from it proximally. The intervening flap of skin was undercut, mobilising it in the centre but leaving it attached at the proximal and distal ends, and it was used to cover the amnioplastin. The donor raw area was in turn covered with a full thickness graft from the abdomen.

Periarticular adhesions proved a serious handicap in two of the cases (3 and 4). The adhesions were firm and gentle manipulation produced little improvement in the range of movement. At operation a record of the absolute range of passive movement should be made, for this sets the limit to the amount of movement one can finally expect.

Peritendinous adhesions were present in all cases but varied in amount and distribution. In case 1, there were slight anterior and posterior adhesions. In cases 2 and 3, dense scarring of the anterior sheath wall bound down the tendons but there were no gross posterior adhesions. In case 4, the remains of the flexor pollicis longus were firmly scarred anteriorly and posteriorly. To form a new sheath and prevent the tendon from becoming adherent again, the exposed areas of tendon were covered by a layer of amnioplastin. Where posterior adhesions had been removed, one layer of amnioplastin was placed deep to the tendon and another layer laid on its anterior aspect. The tendon was completely covered by the amnioplastin, which adheres lightly without any suturing.

There was no gross inflammatory reaction in any of the cases. In case 1, the original infection had been slight and operation was carried out two weeks after injury. Postoperative sepsis was limited to slight reddening of the skin edges for a few days. In case 2, five months elapsed between the original wound, which was lightly infected, and the first plastic operation, while a further two months separated the two plastic operations. Postoperative sepsis was again slight, even though healing was complicated by the presence of a full thickness graft with insufficient blood-supply. Case 3 had gross sepsis originally and was operated on two months after the original drainage wounds had healed. The slight postoperative sepsis which occurred was limited to the area of the skin graft. There was no postoperative sepsis in case 4, where operation was carried out three months after the original infected wounds had healed. Sulphanilamide, as powder insufflated into the wound and as tablets by mouth, was exhibited in cases 2, 3 and 4, but no conclusions could be drawn as to its value.

In all cases the superficial tissues have remained freely movable over the tendon for three months after operation. Case 2 provided a valuable opportunity to examine the amnioplastin in situ two months after insertion. It was found as a thin transparent gelatinous membrane, from which the overlying fibrosed tissues were easily separated, and beneath which the tendons could be seen to move freely. Moreover, there were signs of it being vascularised from the edges.

The results so far have been gratifying. In case 1, scar contracture and periarticular adhesions were absent. In spite of the profundus and half the sublimis being lost good power and a fair range of movement (m.p. joint full, proximal i.p. joint 180°–150°) were obtained. In case 2, scarring and contracture of the superficial tissues and anterior wall of sheath were causing a crippling deformity. The patient now has full movement of m.p. and proximal i.p. joints and good power. Scarring, peritendinous and periarticular adhesions combined to produce an awkward stiff finger in case 3. Nevertheless she now has a finger with moderate power and a useful range of movement. In this case the profundus tendon continues to move through the sublimis to produce flexion at the terminal i.p. joint. Case 4 showed that even when most of the tendon has sloughed the remainder can supply moderate power and mobility providing the joints are free. The lumbricals (cases 1, 2 and 3) and the small thenar muscles (case 4) greatly assisted the salvaged tendons in the production of power and flexion at the m.p. joints.

Since tendons which have been fixed by suppurative tenosynovitis can be mobilised and prevented from re-adhering by wrapping amnioplastin round them, it seems advantageous to use amnioplastin in the same way when suturing cut flexor tendons on the fingers and in tendon transplantation or reconstruction operations. The material is easy to obtain in any hospital where there is an obstetric department, and was kindly prepared for me by the pathological laboratory staff. All the cases were treated as outpatients only. Postoperative pain was slight, never lasted more than twenty-four hours, and was easily controlled by aspirin (gr. 10 six-hourly).

SUMMARY

Stiff fingers due to suppurative tenosynovitis may be partially mobilised and further adhesions prevented by using amnioplastin.

In 4 cases results have been satisfactory up to three months after operation.

The use of amnioplastin is suggested in suturing cut flexor tendons and in plastic operations on these tendons.

I wish to thank the medical superintendent of the hospital for permission to publish these cases.

REFERENCES

Chao, Y. C., Humphreys, S. and Penfield, W. (1940) *Brit. med. J.* i, 517.
Kohnstam, P. (1941) *Ibid*, i, 493.
Law, B. B. and Philip, J. F. (1941) *Ibid*, i, 514.
Penfield, W. (1940) *Ibid*, ii, 668.
Rogers, L. (1941) *Ibid*, i, 587.

NATURAL HISTORY OF BRIGHT'S DISEASE *

CLINICAL, HISTOLOGICAL AND EXPERIMENTAL OBSERVATIONS

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III.—THE VICIOUS CIRCLE IN CHRONIC BRIGHT'S DISEASE

THE experimental production of hypertension in animals has been attempted for many years. The results of these manifold efforts suggested that any measure which led to diminished blood-flow through the kidney might lead to hypertension. It was the realisation of this generalisation which led to the successful experiments of Goldblatt and his colleagues (1934), who devised a screw-clip which, when applied to the renal artery, enabled them to diminish in varying degrees the blood-supply to the kidney. Goldblatt found that if such a clip was applied to one renal artery of a dog, hypertension resulted. Owing to the development of a collateral circulation this hypertension was, however, temporary, and to make the hypertension permanent clips had to be applied to both renal arteries. Some of these dogs with permanent experimental hypertension died with renal failure and showed in organs other than the kidney acute arteriolar lesions exactly similar to those seen in malignant hypertension in man (Goldblatt 1938). These acute vascular lesions were not present in the kidneys, presumably because, owing to the clips, the hypertension was not present in these organs. This observation was made independently by Wilson and Pickering (1938) who described widespread acute arteriolar lesions in rabbits similar to those seen in malignant hypertension in man.

More important than this, Wilson and Byrom (1939) produced permanent hypertension in rats in which one renal artery only was clamped. Glomerular and arteriolar lesions identical with those seen in malignant hypertension occurred in the unclamped kidney and were absent in the clamped kidney. These lesions included acute fibrinoid necrosis of the arterioles (figs. 1 and 2), endarteritis of the medium-sized arteries, acute changes

* The third and concluding Croonian lecture for 1941; not delivered owing to the war.

in the glomeruli—including focal necrosis of the tuft, proliferative glomerulitis, capsular adhesions and hæmorrhagic infarction—and round-cell infiltration in the interstitial tissue, changes which, in the human kidney, had long been regarded as evidence of "nephritis." This experiment seems to demonstrate convincingly that certain histological lesions of the kidney formerly accepted as characteristic of nephritis can result from vascular lesions due to high blood-pressure—a conception already reached on purely clinical grounds.

These results were obtained in experiments of relatively short duration, most of the animals being killed within a few weeks of the onset of hypertension. Wilson and Byrom (1941) have also studied the results of long-standing hypertension in the rat. For this investigation 49 rats were killed after hypertension had persisted for periods of eight to forty-six weeks. Microscopically, obvious lesions were found in the unclamped kidney in most of the rats in the series; these differed from the acute necrotic lesions of the earlier experiments in being more chronic. Interstitial fibrosis and tubular atrophy and dilatation were more pronounced and the changes in arterioles and glomeruli suggested organisation and healing of the acute necrotic changes (fig. 3). Not uncommonly acute and chronic lesions were seen in the same kidney—evidence of the progressive character of the process. The lesions were essentially focal and vascular in distribution, occurring in wedge-shaped areas related to the artery of supply, the structures in the intervening areas between the wedge-shaped areas of atrophy being relatively well preserved. In severe cases, however, the changes were so extensive that the greater part of the kidney was involved.

Wilson and Byrom have described in detail the changes found in these rats. From their description and photomicrographs it will be seen that the kidneys closely resemble those seen in certain forms of chronic hypertensive Bright's disease. The earlier observations of Wilson and Byrom established that the acute vascular and renal lesions seen in malignant hypertension in man could result in the rat from hypertension alone; these findings in rats with long-standing hypertension show that, in the rat, hypertension can also lead to chronic renal and vascular lesions which reproduce almost perfectly those found in certain forms of chronic Bright's disease in man (figs. 3–6).

There is a further inference to be drawn from these observations: the possibility of a vicious circle in which hypertension leads to occlusive renal vascular lesions with resulting renal ischæmia, this in turn giving rise to further hypertension. That such a vicious circle does exist in the experimental animal is substantiated by their further experiments which have shown: (1) that hypertension persists in the rat after removal of the clamped kidney; (2) that this persistent hypertension is related to the severity of the damage in the unclamped kidney; and (3) that further acute vascular lesions arise after the clamped kidney has been removed.

In the rat, then, the experimental production of ischæmia in one kidney leads to hypertension which in turn leads to destructive vascular lesions in the other kidney. If the clamped kidney is now removed, hypertension persists owing to the ischæmia produced by these hypertensive lesions in the remaining unclamped kidney. Moreover the condition is progressive, further vascular lesions giving rise to increasing ischæmia of the kidney which in turn augments the hypertension—a true vicious circle.

Clinical Implications

The demonstration by Goldblatt that renal ischæmia can lead to hypertension has persuaded some writers to return to the old idea that all hypertension is renal in origin. In discussing the ætiology of essential hypertension I showed that the evidence for this view was inconclusive and that there was a considerable body of evidence pointing in the opposite direction. I do not think that Goldblatt's work justifies the assumption that all hypertension is renal in origin. I suggest that the conception of a non-renal essential hypertension should be retained until further evidence of its mode of origin is forthcoming. The important advance which has followed from Goldblatt's work is, in my opinion, the demonstration by Wilson and Byrom that hypertension can produce in the kidney progressive histological changes formerly termed "chronic interstitial nephritis." The recognition of malignant hypertension had already demanded the acceptance of this concept, but the production by designed experiment of such renal lesions has, I think, definitely established their hypertensive origin; and this is crucial to an understanding of chronic Bright's disease.

A major difficulty in the understanding of chronic Bright's disease is that different forms of renal disorder may, in their late stages, show a very similar clinical picture, consisting of hypertension, renal failure and hypertensive retinitis with papilloedema. Histologically the same difficulty occurs, the kidneys showing a similarity of histological change which has made their differentiation difficult. This is the syndrome formerly called chronic interstitial nephritis and still so described in most textbooks. For many years close observers of Bright's disease have suggested that chronic interstitial nephritis was not an entity, since the natural history of such cases was so varied. This view is now gaining general acceptance. The recognition of malignant hypertension and its differentiation from chronic type 1 nephritis was an important step in this direction. More recently, appreciation that chronic pyelonephritis could have a similar end-result, and that it accounted for a considerable group of patients dying with contracted kidneys, has marked a further advance. We are all familiar with other renal disorders which may have a similar termination—for example, the late stage of a toxæmia of pregnancy which has not cleared up, or the chronic interstitial nephritis seen sometimes in workers in lead. Indeed even the amyloid kidney may terminate with the clinical and histological picture of chronic interstitial nephritis superimposed on amyloid disease.

The animal experiments of Wilson and Byrom seem to offer an explanation of this similar termination to such different conditions. We have seen that renal ischæmia leads to hypertension and that hypertension can itself produce chronic renal lesions. Since almost any renal disorder may lead, in its later stages, to renal ischæmia, it is not surprising that hypertension is a late manifestation in so many forms of renal disease, nor is it surprising that in these different disorders renal lesions of similar type due to this hypertension are also found. I suggest that chronic interstitial nephritis, as we have known it in the past, is merely the result of hypertension; and that the term should now be dropped, leaving us free to turn to a closer study of the various underlying disorders in relation to their attendant hypertension.

TYPE 1 NEPHRITIS

I have already pointed out (in my first lecture[1]) that in addition to death or recovery type 1 nephritis could terminate in two ways: by a rapidly progressive course, with death in a matter of weeks or months (the subacute nephritis of Volhard); or by a very chronic course persisting over years or decades (the "chronische Nephritis mit sehr langsamer Verlaufsart" or the "Vaskular typus" of Volhard). The first of these conditions is obviously a progressive glomerulonephritis. Clinically there is a steadily progressive picture and histologically the glomeruli show what is obviously a progressive stage of the acute lesion. There is no evidence that hypertension plays a material part in the progress of the disease in these patients. Terminally, however, hypertension seems sometimes to play a part, for not infrequently there is a "malignant termination" with well-marked hypertension and papilloedema. In such cases hypertensive vascular and glomerular lesions will be found on histological examination.

The second course of chronic type 1 nephritis is very different. Here we see recovery from the acute attack except for a persistent symptomless albuminuria followed by a gradually developing hypertension and ending in uræmia years or decades later with severe hypertension, hypertensive retinitis and papilloedema. Histologically the kidneys of such patients show no obvious trace of the original condition, the histological picture being similar to that seen in long-standing hypertension in rats. We agree with Volhard in considering this course of nephritis to be a vascular process. This view is supported by the focal distribution of the lesions, which consist of wedge-shaped areas of atrophy and fibrosis

1. *Lancet*, Jan. 3, 1942, p. 1.

separated by areas of relatively well-preserved tissue in which the remaining tubules are dilated. This distribution is also present in rats with long-standing hypertension, and the glomerular and vascular lesions are also very similar. We interpret the march of events in these patients as follows: the acute nephritis subsides but some damage remains as evidenced by persistent albuminuria, whence we presume there is also some permanent vascular damage which leads to renal ischæmia; this renal ischæmia eventually leads to renal hypertension, and so a vicious circle is introduced, hypertension causing vascular damage leading to further ischæmia and augmented hypertension.

TYPE 2 NEPHRITIS

This is a progressive disorder, as is made evident by its steadily downhill clinical course and the histological picture of a diffuse glomerulonephritis involving more or less equally all glomeruli, which show increasing structural disorganisation as the disease progresses. Until the late stages hypertension is usually not a prominent feature, and histologically we see no evidence of hypertensive lesions in patients dying in the earlier stages. Terminally there is often a considerable rise of blood-pressure, and when this occurs hypertensive retinitis (with papilloedema) and renal failure rapidly follow. In such instances hypertensive renal and vascular lesions may be found, the vascular lesions being often of the acute necrotic type seen in malignant hypertension.

MALIGNANT HYPERTENSION

This condition is the outstanding demonstration of so-called chronic interstitial nephritis caused by hypertension. The conception of a vicious circle explains the rapidly progressive course of this disorder. Further it removes the main obstacle to its recognition by the pathologist, for the occurrence of such a vicious circle as a terminal event in other forms of renal disease explains the presence in these conditions of the acute necrotic vascular lesions so constantly seen in malignant hypertension. This conception also explains the occasional occurrence of a malignant termination in patients with benign hypertension.

BENIGN HYPERTENSION

The vast majority, probably more than 90%, of all patients with hypertension belong in this benign group, in which with rare exceptions no renal damage is clinically demonstrable. At death the kidneys show varying degrees of arteriosclerosis which we consider to be the result of the hypertension, not its cause. We do not know why the vicious circle is so seldom seen in these patients. Factors which may be concerned are the age of the patient, the rate at which the hypertension develops and its intensity in the early stages. The mechanism of the vicious circle does occasionally come into action in benign hypertension, sometimes in the form of a malignant termination and sometimes in a more chronic form, as discussed in my last lecture.

CHRONIC PYELONEPHRITIS

In recent years it has become increasingly realised that in certain cases chronic pyelonephritis can lead to death in uræmia. This has been due chiefly to the work of Longcope (1933, 1937), whose observations have been confirmed by Weiss and Parker (1939). These observers believe that many cases formerly regarded as chronic glomerulonephritis are really examples of chronic pyelonephritis. In such cases there is commonly gross renal contraction or well-marked inequality in size of the kidneys. It is surprising that this degree of renal contraction and renal failure occurs in only a minority of cases of pyelonephritis, and it may be that there is in this group some primary developmental abnormality, vascular or otherwise, which leads to imperfect drainage of the kidney and hence predisposes to infection. The series of cases of renal dwarfism with an associated dilatation of the urinary tract which Evans and I reported some years ago are presumably of this type. Whether this is so or not, chronic pyelonephritis is difficult to recognise clinically, for only rarely is there a history of symptoms suggesting pyelitis, and in the late stage, when these patients usually first come under observation, pus is often absent from the urine; bacteria, of which *Bacillus coli* is the most common, may or may not be present. Longcope has called attention to the very slow rate of progress in this condition and we have repeatedly confirmed this observation. These patients may have advanced renal failure (even a blood-urea over 100 mg. per 100 c.cm.) for several years and yet remain in moderately good health and capable of work. In our opinion this is seen, however, only in the absence of any considerable hypertension. In those patients who develop hypertension the blood-pressure may reach high levels, downward progress is then rapid, hypertensive retinitis with papilloedema appears and death occurs in uræmia.

The histological picture in chronic pyelonephritis is characteristic, and once appreciated can be recognised and separated from other forms of so-called chronic interstitial nephritis. The form with which it is most often confused is chronic type 1 nephritis. The main histological features of chronic pyelonephritis are extensive atrophy and fibrosis involving medulla as well as cortex, the latter containing areas of dilated tubules full of hyaline casts resembling the histological appearance of thyroid tissue; beneath the capsule large collections of closely set, completely hyalinised glomeruli may be seen. A very characteristic glomerular lesion is dilatation of the capsular space, with pericapsular fibrosis, and thickening of Bowman's capsule which may assume a curious wavy appearance (fig. 7). Polymorphonuclear leucocytes may be present in some tubules and there may be thickening of the peripelvic tissues with evidence of chronic inflammation. If hypertension has been present, hypertensive lesions may also be seen (fig. 8). Excluding cases of malignant hypertension, out of 45 contracted kidneys in our series studied histologically, 13 were examples of chronic pyelonephritis.

A further observation on chronic pyelonephritis confirms the experimental findings of Wilson and Byrom and demonstrates that the results they obtained in rats are directly applicable to man. I refer to the examples of unilateral renal disease, often a pyelonephritis, associated with hypertension. Cases were first described by Butler (1937) and Leadbetter and Burkland (1938), in which removal of a diseased kidney led to the disappearance of a previous hypertension. A number of further cases have since been reported. Weiss and Parker (1939) have called attention to the finding at autopsy of a small atrophic kidney on one side and a normal or enlarged kidney on the other, the latter showing histologically the picture of malignant hypertension. We have seen this association several times, and in view of the experiments in rats it is what we should expect, ischæmia in the atrophic kidney leading to hypertension which in turn leads to hypertensive lesions in the healthy kidney. From the animal experiments it appears that hypertension might persist after, or be aggravated by, removal of the diseased kidney if lesions of sufficient extent have developed in the other kidney. This probably explains the persistence of the

LEGENDS TO ILLUSTRATIONS

FIG. 1—Rat kidney. Acute fibrinoid necrosis of afferent arteriole to glomerulus in unclamped kidney of hypertensive rat. (× 260.)

FIG. 2—Human kidney. Malignant hypertension, acute fibrinoid necrosis of afferent arteriole to glomerulus. (× 165.)

FIG. 3—Rat kidney. Chronic hypertensive lesion of glomerulus showing organising necrosis with loss of lobulation of tuft, cellular proliferation, heightening of capsular epithelium and extensive capsular adhesions. (× 320.)

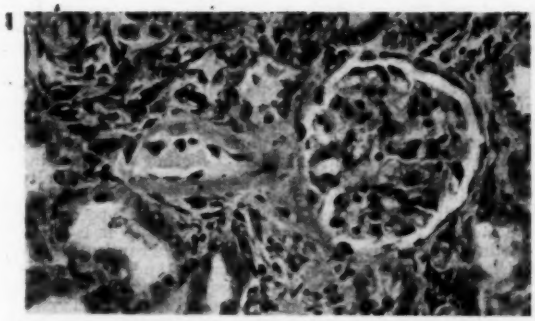
FIG. 4—Human kidney. Chronic type 1 nephritis. Similar picture with organised lesion of afferent arteriole. (× 170.)

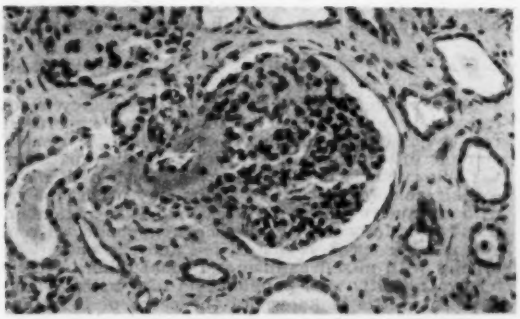
FIG. 5—Rat kidney. Focal areas of tubular atrophy and dilatation in unclamped kidney of hypertensive rat. (× 39.)

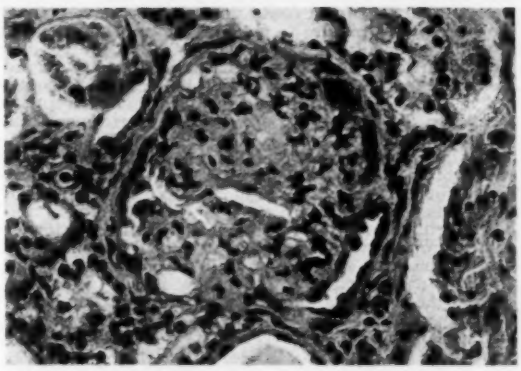
FIG. 6—Human kidney. Malignant hypertension, showing similar picture. (× 44.)

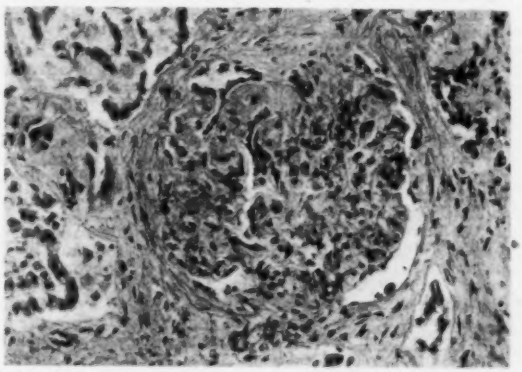
FIG. 7—Human kidney. Chronic pyelonephritis. Dilatation and distortion of Bowman's capsule with capsular fibrosis. (× 170.)

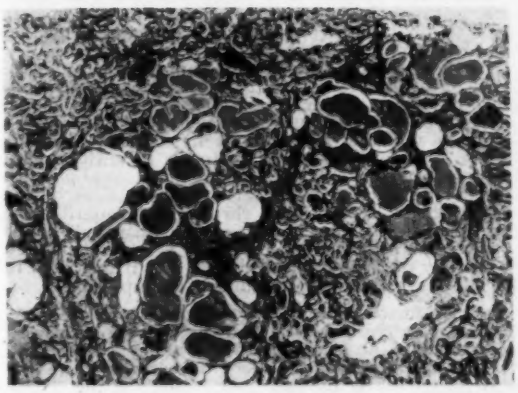
FIG. 8—Human kidney, chronic pyelonephritis. "Hypertensive" glomerulus showing necrosis of capillary loops, increased cellularity of tuft, extensive capsular adhesions and heightening of parietal and visceral epithelium. (× 170.)

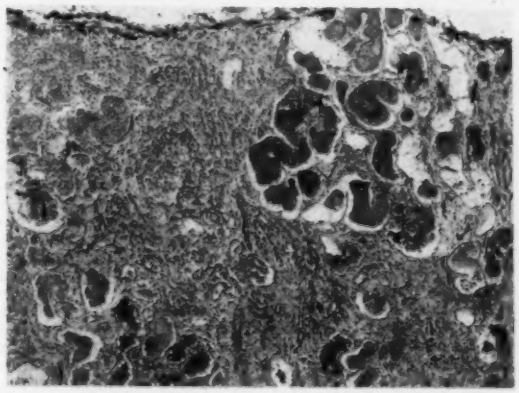


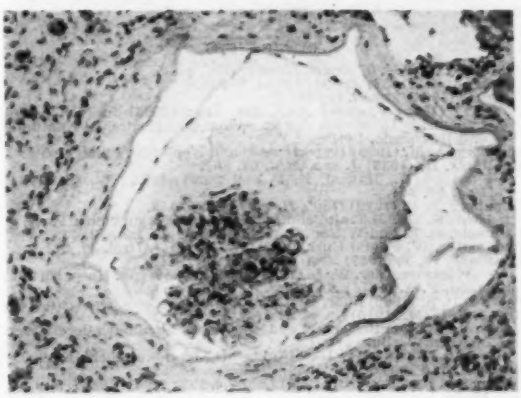


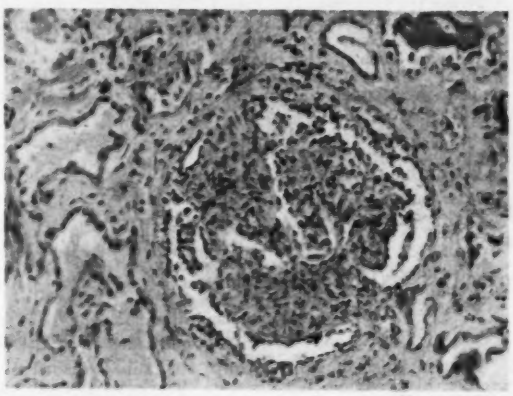












Legends to the illustrations are given on the preceding page

hypertension which is sometimes seen after removal of a kidney in what appeared to be unilateral renal disease.

TOXÆMIA OF PREGNANCY AND OTHER CAUSES OF CHRONIC HYPERTENSIVE BRIGHT'S DISEASE

Most patients with toxæmia of pregnancy recover completely after delivery, but in some hypertension persists and may ultimately reach high levels. The amount of albumin in the urine of such patients is variable; it may be slight or even absent or it may be considerable. This state of affairs may persist for years without much evidence of ill health and the patient may pass successfully through further pregnancies. Eventually renal function begins to fail and the patient dies, usually with mixed cardiac and renal failure. Hypertensive retinitis with papilloedema may or may not be present. Little is known of the cause of toxæmia of pregnancy or of the mechanism of the hypertension which occurs in it. Fishberg (1939) regards the hypertension as a form of essential hypertension. In our experience the course differs from that usually seen in benign hypertension, the amount of renal involvement being greater; thus albuminuria is more frequent and more marked, and renal failure common. The course, however, is a slow one and only after many years—ten to fifteen, for example—leads to death in uræmia with or without a malignant termination. I visualise the process as one of slowly progressive renal ischæmia analogous to that occurring in chronic type 1 nephritis but originating from a different cause.

We have seen that any condition leading to ischæmia of the kidney may give rise to hypertension, and, by the establishment of a vicious circle, to "chronic interstitial nephritis." This seems to be the explanation of the occurrence of the latter in the chronic hypertensive disease of lead workers and occasionally in various other conditions such as amyloid disease, congenital cystic kidneys, and oddities such as atheroma or congenital hypoplasia of a main renal artery.

* * *

I have considered the course of various forms of chronic hypertensive Bright's disease and have shown that what is called chronic interstitial nephritis is not an entity but the manifestation of a process which may occur in any form of renal disease with hypertension. This process consists in the establishment of a vicious circle dependent on renal ischæmia. Chronic interstitial nephritis is merely the end stage of various forms of renal disorder, and for a proper understanding of Bright's disease this term should be discarded. Chronic hypertensive Bright's disease is composed of a number of entities, including chronic type 1 nephritis, chronic type 2 nephritis, benign and malignant hypertension, chronic pyelonephritis, the hypertension following toxæmia of pregnancy, and various other odd conditions. The separation of these various entities is most easily achieved by careful observation of the natural history of their development. Since hypertension is common to them all it is not surprising that the morbid anatomist viewing the end state has found difficulties of interpretation, or that the pathological classification of Bright's disease has been traditionally confused.

On the basis of the clinical, histological and experimental observations reported in these lectures I would propose the following classification of Bright's disease:—

Nephritis.	Type 1 nephritis. Type 2 nephritis.
Essential hypertension.	Benign hypertension. Malignant hypertension.
Miscellaneous conditions.	Acute focal nephritis. Acute interstitial nephritis. Toxæmia of pregnancy. Mercurial nephrosis. Amyloid nephrosis. Chronic pyelonephritis. "Chronic nephritis" of lead workers.

In the miscellaneous group the renal disorder is incidental to some other disease. The conditions in this group are best considered in relation to their primary cause and separated from the two main groups of Bright's disease—nephritis and essential hypertension.

Summary

There are two varieties of nephritis, differing in their ætiology, mode of onset and course. Recovery is the rule in one and the exception in the other. We have designated these two types of nephritis type 1 and type 2. Type 1 nephritis commonly has a history of preceding infection (84%). Its onset is abrupt, blood is usually present in the urine, complete recovery normally occurs (82%). Type 2 nephritis has a history of preceding infection in less than 5% and even in these it is often indefinite. Its onset is insidious, blood is rarely present in the urine, the disease is progressive and recovery is rare. We include nephrosis in type 2 nephritis. The course of the two types of nephritis is different. Type 1 nephritis may run a rapid or a very chronic course; type 2 nephritis runs a continuously progressive course. The histological picture in the two types of nephritis is different, especially in the late stages.

Until further evidence is available it is best to regard essential hypertension as non-renal in origin. It is seen in two forms—benign hypertension, which comprises more than 90% of all patients with hypertension, and malignant hypertension. In benign hypertension there is usually no evidence of renal impairment, and renal failure only very rarely occurs; the condition may persist for decades. In malignant hypertension renal involvement is always present in the late stages and death in renal failure is common. The condition is rapidly progressive, the patient usually dying within a year of the first symptom. The pathognomonic sign of malignant hypertension is papilloedema.

Experiments in animals have shown that renal ischæmia leads to hypertension and that this hypertension can produce in the kidney lesions formerly regarded as "nephritis." Moreover this process is progressive, a vicious circle being established in which renal ischæmia leads to hypertension and this in turn leads to obliterative vascular lesions causing further renal ischæmia and augmented hypertension.

So-called chronic interstitial nephritis is a hotchpotch of various renal disorders on which this vicious circle has been superimposed. The expression should therefore be discarded, and if a generic term is required should be replaced by "chronic hypertensive Bright's disease." This consists of a number of entities with different natural history and different histological picture: chronic type 1 nephritis, chronic type 2 nephritis, benign and malignant hypertension, chronic pyelonephritis, the hypertension following toxæmia of pregnancy, and the hypertension of lead workers. They are best separated by a study of their natural history, but if first seen in the late stage this may be difficult or impossible.

I should like to acknowledge my obligation to Prof. Hubert Turnbull, F.R.S., who placed at my disposal the histological preparations of his department, and to my collaborators Dr. Horace Evans and Dr. Clifford Wilson, with whom it is hoped to publish in the near future details of the clinical material on which these lectures are based.

REFERENCES

Allbutt, C. (1895–96) *Trans. Hunter. Soc.*, p. 38.
Butler, A. M. (1937) *J. clin. Invest.* **16**, 889.
Ellis, A. (1938) *Lancet*, i, 977.
Fahr, T. (1919) *Virchows Arch.* **226**, 119; (1925) in Henke and Lubarsch's Handbuch der speziellen pathologischen Anatomie und Histologie, Berlin.
Fishberg, A. M. (1939) Hypertension and Nephritis, Philadelphia.
Goldblatt, H. (1938) *J. exp. Med.* **67**, 809.
— Lynch, J., Hanzal, R. F. and Summerville, W. W. (1934) *Ibid.* **59**, 344.
Goodhart, J. F. (1879) *Guy's Hosp. Rep.* **24**, 153.
Huchard, H. (1899) Traité clinique des maladies du cœur, Paris.
Kimmelstiel, P. and Wilson, C. (1936) *Amer. J. Path.* **12**, 45.
Leadbetter, W. F. and Burkland, C. E. (1938) *J. Urol.* **39**, 611.
Longcope, W. T. (1937) *Ann. intern Med.* **11**, 149.
— Winkenwerder, W. L. (1933) *Bull. Johns Hopk. Hosp.* **53**, 255.
Mahomed, F. A. (1874) *Brit. med. J.* i, 585.
Russell, D. S. (1929) Spec. Rep. Ser. *Med. Res. Coun. Lond.* No. 142.
Turnbull, H. M. (1915) *Quart. J. Med.* **8**, 201.
Volhard, F. (1931) Bergmann and Staehelin's Handbuch der inneren Medizin, Berlin.
— and Fahr, (1914) Die Brightsche Nierenkrankheit, Berlin.
Weiss, S. and Parker, F. (1939) *Medicine*, **18**, 221.
Wilson and Byrom, F. B. (1939) *Lancet*, i, 136; (1941) *Quart. J. Med.* **10**, 65.
— and Pickering, G. W. (1938) *Clin. Sci.* **3**, 343.

Medical Societies

ROYAL SOCIETY OF MEDICINE

AT a meeting of the Section of Surgery on Jan. 7, with Mr. E. ROCK CARLING, the president in the chair, five short communications were made.

REGIONAL ANÆSTHESIA

Mr. H. W. BURGE, on behalf of himself and Dr. N. R. JAMES, described an improved method of regional anæsthesia in acute abdominal surgery. This consisted of: adequate pre-operative sedation with 'Omnopon' (Roche); the preliminary use of a short-action barbiturate, in their cases hexobarbitone, posterior bilateral nerve block of the lower 7 dorsal nerves; bilateral splanchnic block; oxygen therapy; and gentle technique. Their paper has already been published elsewhere.[1] Commenting on it, Mr. ROCK CARLING said that the Russians, using local anæsthesia for war wounds, had found that the operation turnover was maintained and that patients could be evacuated more rapidly and safely.

ENDOTHORACIC SYMPATHECTOMY

Squadron-Leader J. HUGHES described a technique for endothoracic sympathectomy. Viewed through the thoracoscope the thoracic sympathetic nervous chain could be seen gleaming through the single layer of pleura which covered it. He performed division of the splanchnics and removal of the stellate ganglion by means of a specially designed scissors and forceps which can be introduced together through a single cannula, the same size as the cannula used for thoracoscopy. Pneumothorax was induced in the patient over a week, and checked by radiography. For section of the splanchnic the patient lay face downwards and one cannula was introduced between the 7th and 8th ribs, the other between the 8th and 9th ribs. The upper cannula was used for thoracoscopy, the lower for instruments. The pleura at the level of the great splanchnic nerve was incised over the body of the vertebra, where it was relatively insensitive; the forceps were then withdrawn from the cannula and a blunt hook inserted by means of which the splanchnic was drawn through the pleural incision. A piece of the nerve was excised with the scissors, and if swabbing was needed the hook was removed and a piece of gauze introduced by the forceps. Removal of the stellate ganglion was carried out from the front with the patient lying on his back. The neck of the 2nd rib was identified and the pleura was infiltrated over the necks of the 1st and 2nd and almost down to the 3rd vertebra. A vertical incision was then made in it with the scissors, and if the stellate ganglion could be seen it was picked up and the rami divided above and below. If it could not be identified it was necessary to clean away all tissue down to the neck of the 2nd rib in order to ensure its destruction. Squadron Leader Hughes reported 4 cases treated in this way, 2 for hypertension, 1 for Raynaud's disease, and one for pain in an amputation stump. In the first patient bilateral splanchnic resection was carried out successfully in two operations. The initial blood-pressure was 238/140 mm. Hg, but on discharge it had only fallen to 216/136. The second case had coronary insufficiency as well as hypertension, and died of coronary occlusion four days after the first operation, for right splanchnic resection. In third patient resection of the right stellate ganglion was done, after which the Raynaud's disease, which had affected both her hands, was much improved in the right. In the fourth patient resection of the right stellate ganglion relieved all pain in the stump of his amputated right arm.

URINARY DIASTASE IN THE ACUTE ABDOMEN

Mr. E. B. HUGHES said that in America deviations from the normal value of the diastase, or amylase, of the urine in acute abdominal conditions were regarded as rare except in acute pancreatitis. Normally the diastase content of the urine fluctuated, depending on the concentration of the urine. He had investigated the level in all the acute abdominal cases admitted to an outlying hospital, using single specimens taken before operation. In one case diagnosed as perforated peptic ulcer the urinary diastase had been over 300 units, and he had hurried to the theatre where the operation was in progress, expecting to see an acute pancreatitis. Actually the case proved to be a perforated peptic ulcer, as diagnosed, and the pancreas was perfectly healthy; there were, however, patches of fatty necrosis in the omentum. The same thing happened in a second case: there was a high urinary diastase, a perforated ulcer, and some patches of fatty necrosis. In both these cases the urinary diastase fell to normal soon after the operation. Later he saw two other cases of the same kind, though in the second of these the urinary diastase did not reach a level as high as that in the other three. He therefore concluded that levels of urinary diastase up to 400 units in acute abdominal cases did not seem to be diagnostic between acute pancreatitis and perforated peptic ulcer. The fatty necrosis seen in these cases might be explained in one of three ways: there might be an area of acute pancreatitis existing independently of the perforating ulcer, but this seemed unlikely; or ulcers might be present which had penetrated the pancreatic tissues, though there was nothing to suggest this in the case seen; or—most probably—the duodenum might have contained much pancreatic juice at the time of perforation and this, on escaping, might have caused the fatty necrosis.

TETANUS IN A LONDON SECTOR

Mr. E. J. RADLEY SMITH said that in Sector 9 tetanus had been made notifiable, and 7, possibly 8, cases had been reported in the first two years of war. All except one were in civilians who had not been immunised; and the only soldier affected had also escaped immunisation. He also failed to receive a prophylactic dose of antitetanic serum, when he returned wounded from Dunkirk, because his injury was slight, and the limited supply of serum then available was used for graver cases. He developed tetanus 7 days after being wounded and died in spite of large doses of serum given as soon as symptoms appeared. The remaining 6 certain cases of tetanus all received prophylactic doses of 2000–3000 units on the day of injury; only one of them died, a woman of 45 who had been pinned against a hot stove in a bombed house and suffered burns of the side and thigh. She developed symptoms on the 10th day and died on the 12th in spite of much serum. The one doubtful case was seen in a girl who had a penetrating wound of the brain, piercing the temporal muscle, and who afterwards developed a cerebral abscess. The spasm of the temporal muscle which developed might have been due to the injury. Only in 2 cases in the series were the injuries severe or deep, and both of these recovered. The official prophylactic dose had first been 2600 units, but lately it had been proposed that 3 doses of 3000 units should be the routine; unfortunately the first proposal still lingered in the minds of the profession, and moreover prophylactic serum was seldom given to patients with burns. Thus the optimum prophylactic dose was not likely to be extended to all casualties. The advantages of active immunisation, he thought, should be laid before the public.

Mr. S. M. COHEN said that of 3 cases occurring at his hospital, one had been a case of burns. Tetanus bacilli were often present on the skin, and in cases of burns smears should be examined for these organisms, especially before enclosing a burned limb in a Bunyan-Stannard envelope. Mr. ROCK CARLING remarked that the official prophylactic dose had been raised from 2600 to 3000 because of deterioration of the serum on keeping; probably a fresh issue should now be sent round the country.

REPLACEMENT OF AVULSED TISSUE

Mr. P. H. JAYES described the case of a gipsy boy who was savaged by an unfamiliar horse, losing a piece of skin and subcutaneous tissue measuring 7 in. by 3½ in. from the front of his right thigh. His mother retrieved the missing piece, clapped it back and brought him to hospital. The boy was anæsthetised and the wound and the avulsed skin cleansed. The missing tissue had left the underlying muscles exposed but undamaged, and the upper part of the patella was visible at the lower end of the wound. The fat was dissected off the under surface of the skin, which was thus converted into a skin graft; it was stitched carefully into place with interrupted sutures, tiny slits were made in it, and it was dressed firmly with fine layers of wool soaked in paraffin, gauze, wool and a

1. *Brit. med. J.* 1941, ii, 906.

firm bandage; the leg was placed on a plaster back splint. The graft took except for a small area which had been bruised at the time of injury.

Mr. R. H. O. B. ROBINSON said that in flaying wounds where the skin was rolled back like a stocking there was a great temptation to roll it straight up again and stitch it. Removal of the subcutaneous fat was evidently important, and should be part of the technique. Mr. S. M. COHEN asked whether such a skin graft could have been put back over bare tendon or bone, or over lacerated muscle. Was not a scarless bed needed? Mr. JAYES replied that it was possible to place such a graft over tendon, or over bone provided the periosteum was intact. Over a lacerated muscle it would not be satisfactory: a smooth surface was needed.

Reviews of Books

Principles and Practice of Ophthalmic Surgery

(2nd ed.) EDMUND B. SPAETH, M.D. London: Henry Kimpton. Pp. 886. 48*s*.

THIS standard American textbook is a review of the world literature on the theory, principles and art of ophthalmic surgery. Professor Spaeth in his second edition has included not only those surgical operations which he practises himself, but also those which he does not, quoting verbatim and at length from the writings of others. For instance, in the radiotherapy section he quotes Stallard, and the section on corneal transplants is drawn completely from the writings of Ramon Castroviejo, an acknowledged master of the subject. The work is rather a reference book for the practising ophthalmic surgeon than a textbook for the student, who will find in it far more than he needs. It is thus remarkable that in one or two places the information should be scanty; for example, the operative technique for the removal of a magnetic intra-ocular foreign body by the anterior route is dismissed in two paragraphs, and there is no mention of the giant magnet, without which many such foreign bodies would defy removal. Professor Spaeth condemns the posterior route, except when its use is absolutely necessary—an opinion shared by most ophthalmic surgeons in this country.

The Story of Clinical Pulmonary Tuberculosis

LAWRASON BROWN, M.D., late director of Trudeau Sanatorium and lecturer in Trudeau School of Tuberculosis. London: Baillière, Tindall and Cox. Pp. 411. 15*s*.

THIS posthumous arrangement of lectures delivered by Lawrason Brown to Saranac students is supplemented with chapters on radiological diagnosis and thoracic surgery by two of his very distinguished friends. The story details the slow and erratic growth and diffusion of tuberculosis lore throughout the ages and is divided into (*a*) the period of symptoms, extending from earliest times to Auenbrugger's development of percussion in the middle of the 18th century, (*b*) the period of physical signs, which includes the discoveries of Auenbrugger, Laennec and Koch, and culminated in the establishment of sanatoria, and (*c*) what might be termed the period of modern methods, from the middle of the nineteenth century to the present day, covering the development of sanatoria, radiology, and surgical treatment. Interspersed in the narrative are portraits of "experts" paying professional visits (reconstructed from contemporary case-records) in the years 1700, 1800, and 1900, which present cross-sections of the knowledge available at those epochs and the current conception (and misconceptions) concerning the nature of the disease. The project of recording a tour with the visiting expert of 1930 was, alas, never achieved. These earlier chapters make first-class reading; they are witty, informative and abounding in imagination. It comes as a shock to realise that Laennec, who devoted his life to developing and preaching *auscultation médiate* (i.e. stethoscopy), never seems to have doubted that all tuberculous patients were doomed; to learn that Forlanini hesitated ten years before inducing his first artificial pneumothorax; and to appreciate the tragic consequences of Brauer's first total thoracoplasty failing to be lethal.

Pity the author did not live to complete and edit what might have been the greatest story in medicine. A neutral observer would conclude that with the advent of X-ray diagnosis workers in pulmonary tuberculosis became exclusively cavity conscious, with cavity obliteration their only aim. There is no mention of allergy and immunity, of the reactions of tissues and body-fluids, of the interrelation of metabolism and infection, of the effects of rest and exercise, of the place of tuberculin and the noble metals in treatment, of the psychology of sanatoria and the psychogenesis of the disease. These are notable omissions from a work sufficiently recondite to place on record the joyous news of a stethoscope invented by an Irish doctor in 1851 which required three hands to use it "and was, of course, impractical." Cavernous tubercle, it seems, is finding its way more and more into the surgeon's hands, and the "expert" of 1941, confronted with a patient's skiagram, announces how many ribs he proposes to remove. From time to time a lone voice may be heard protesting, "Treat the patient and not the X ray" (E. R. Baldwin's is the first on record) much as a games-master yells, "Go for the man, not the ball" from the touchline—and with about as much effect. But that is not the whole story. It is not a fair presentation of the attitude towards pulmonary tuberculosis to-day. Would Lawrason Brown have subscribed to it?

Sternal Puncture

A. PINEY, M.D. Birm., M.R.C.P., physician to St. Mary's Hospital for Women and Children, Plaistow. London: Wm. Heinemann (Medical Books). Pp. 77. 12*s*. 6*d*.

Lord Horder in his foreword hopes this little book will be timely "because it summarises the position of the subject and acts as a manual for investigators whether their approach is on the pathological or the clinical side." A book fulfilling this programme would certainly be useful, but this one does not go far towards completing it. There is only one inadequate plate. The author says this is because sternal puncture work is unlikely to be undertaken by anyone "not already well acquainted with hæmatology," but a person sufficiently experienced to be able to dispense with illustrations will not need to read the text—it is far too elementary. On the other hand the worker reasonably familiar with blood films who wants to graduate to sternal marrow studies will find it hard to make out the various types of marrow cells from the text descriptions. Dr. Piney details the "myelograms" found in different diseases of the blood-forming tissue reasonably clearly, but here again the lack of aim is troublesome: the expert will gain no information, and the tyro will find no guide to differential diagnosis—yet it is in differential diagnosis that sternal puncture serves its most useful purpose. Recent English writings are almost ignored in the bibliography.

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LONDON: SATURDAY, JANUARY 17, 1942

CASTS AND ANURIA

IN most cases of nephritis renal tube casts acquire significance from their appearance during life in the urine rather than from their discovery by the histologist in the kidneys post mortem. They are often expelled in enormous numbers daily for long periods, so there is ordinarily little reason to believe that they have played any part in promoting renal insufficiency by blocking the tubules in which they have formed. Tubular obstruction by casts as a main factor has, however, been put forward with a considerable appearance of justification to explain the renal sequelæ of mismatched blood-transfusion [1] and compression injuries of the limbs.[2] In these conditions extreme oliguria or anuria may set in early and persist until death, when the discovery of large numbers of casts in renal tubules seems to provide an adequate explanation by mechanical obstruction alone. MORISON [3] has supported this view by comparing his findings in three cases of crush anuria with the renal changes in four cases of myelomatosis with Bence-Jones proteosuria. In myelomatosis, as BELL [4] pointed out, the permanent lodgment of very large casts in renal tubules comes to be associated with atrophy of renal parenchyma and fibrosis, and this may be looked upon as an effect of chronic obstruction.

Histological appearances no doubt support the view that blockage of tubules by casts can diminish urinary output, but some observers are not satisfied that mechanical obstruction is the sole, or even the main, cause of anuria after crush injuries and mismatched transfusions. It is not clear why the largest and most prominent casts should become impacted in collecting tubules, which are ever widening as they join up to form the larger ducts; it may be suggested that though their constituents are a primary abnormality they would not have accumulated if there had not been a deficiency in the stream of urine from some other cause. The phenomena of recovery in some cases with copious diuresis and discharge of casts could as readily be attributed to improvement of tubular functions above, with increase of filtrate, as to sudden loosening of all the impacted casts in the lower segments. BYWATERS and BEALL [5] have remarked on the extremely low concentration of any urine that may be voided in cases of crush syndrome, a fundamental defect which is not clearly accounted for by obstruction of some tubules. Some observers [6,7] also consider that the amount of tubular blockage in post-transfusion cases is inadequate to account for renal failure. The experimental evidence is far from decisive. BAKER and DODDS showed that intravenous injection of hæmoglobin gave rise to renal insufficiency and even suppression, but only if the urine had previously been rendered acid so that precipitation occurred in the renal tubules. This has been confirmed by GOLDRING and GRAEFF [8] and by DE GOWIN and others.[9] It is noteworthy, however, that in DE GOWIN'S experiment of seven animals which died of renal insufficiency only two had suppression; in the other five the urinary output remained fairly high until death, a fact which does not tally with mechanical obstruction as the main physiological defect.

There is an alternative explanation for the anuria of these acute conditions. As a rule the glomeruli are normal and alterations in the tubules often seem slight or attributable to the presence of the casts. Definite epithelial changes have, however, been described—cellular necrosis [6] and regeneration with mitoses [10] in post-transfusion cases; extensive regenerative changes in the lower secretory segments of the nephrons in crush syndrome.[11] In view of the importance of intact tubular linings for the transmission of concentrated urine, it may be that these manifestations, which are at times inconspicuous and are identifiable only in well-preserved tissues, are more common and more significant for impairment of function than has been realised. At any rate it seems that something more than mechanical blockage of tubules must be adduced to account for the acute renal failure of crush syndrome and mismatched transfusion.

1. Baker, S. L. and Dodds, E. C. *Brit. J. exp. Path.* 1925, **6**, 247.
2. Longland, C. J. and Murray, J. *Lancet*, 1941, ii, 158.
3. Morison, J. E. *J. Path. Bact.* 1941, **53**, 403.
4. Bell, E. T. *Amer. J. Path.* 1933, **9**, 393.
5. Bywaters, E. G. L. and Beall, D. *Brit. med. J.* 1941, i, 427.
6. De Gowin, E. L., Warner, E. D. and Randall, W. L. *Arch. intern. Med.* 1938, **61**, 609.
7. de Navasquez, S. *J. Path. Bact.* 1940, **51**, 413.
8. Goldring, N. and Graeff, I. *Arch. intern. Med.* 1933, **58**, 825.
9. De Gowin, E. L., Osterhagen, H. F. and Andersch, M. *Ibid*, 1937, **59**, 432.
10. Witts, L. J. *Lancet*, 1929, i, 1927.
11. Dunn, J. S., Gillespie, M. and Niven, J. S. F. *Ibid*, 1941, ii, 549.
12. Potthof, C. J. *J. Amer. med. Ass.* 1941, **117**, 1417.

REALISM IN FIRST-AID

CARE of casualties is an expert business; but skilled surgeons are few, and in war-time injured folk are many. The man who, as the last brick is removed from his chest and the rescue squad stands back, has the luck to catch the eye of a senior orthopædist may live to boast of a unique experience in perfect first-aid. The rest of us will have to make do with the man in the street. It may never be possible to teach this well-meaning chap exactly what to do, or more still what not to do, when he comes across an injured fellow creature. There may always be disasters due to misplaced zeal, ill-digested information and bad teaching; but the better the teaching the better the aid, and the more numerous the competent first-aiders the better for us all. Lecturing to candidates is often undertaken in a light or merely obliging spirit, but it carries a serious responsibility, as a peripatetic correspondent recognises (p. 87). Only those who have lectured to different types of class realise how much depends on the actual technique of teaching, yet few of those doing this relatively thankless job have been taught to teach, and as POTTHOF [12] of Minneapolis insists, first-aid teaching is a specialised task requiring study and practice. American first-aiders, it seems, commit the same errors as English ones. They fail to examine patients carefully enough; they pay attention only to the worst injury; they use splints which are too short; and they incline

to be too free with the tourniquet. POTTHOF thinks they should be better prepared for the difficulties they will encounter on the scene of the accident. It is common at English classes to see a learner holding his arm out nonchalantly for a colleague to splint. One realistic practice, where an accident is staged dramatically and the victim acts the part well, will teach more than a whole course of academic meetings. A suitable exercise would be a bomb incident in which the victim was supposed to have sustained burns of the hands and face, a severe cut on the shoulder from flying glass and a compound fracture of the leg. He must be brought down from an upstairs room over debris. To make the exercise realistic it should be carried out in the dark with shielded torches.

The lectures themselves should be succinct and practical. It is a mistake to spend three-quarters of an hour on the anatomy of the skull and brain and ten minutes on concussion, not because the anatomy is irrelevant or useless but because the perspective is wrong. It wastes the time of a first-aid worker to teach him details of anatomy, because he does not use them often enough to keep them fresh. If he learns that the skull is something like a box made of ply-wood containing something like a pudding wrapped in a cloth he has a good working picture of the structure and can imagine what is going to happen when it is hit. But he needs to be told again and again what the injury is going to look like, what it means for the patient and what he must do with his own hands. The last he must learn by doing the right things again and again. Clearly there is still no uniform opinion about what a first-aider should know; it has not been discussed enough. Medical societies could help to establish standards by arranging discussions on first-aid teaching, at which members could exchange views and experiences, swap stories of common errors among candidates, and pass on mnemonics and suggestions for exercises. These are no trifles. Any of these dark nights the skill and conscience of a first-aid lecturer may mean the difference between survival and death for somebody, and if invasion comes the efficiency of our first-aid may turn the scale.

CATARRHAL JAUNDICE

VIRCHOW regarded "catarrhal" jaundice as due to obstruction of the lower end of the common bile-duct by mucus and debris resulting from a duodenal catarrh and associated cholangitis, and hence its name arose. Of late years the conflicting view that it is a primary affection of the liver has been gaining ground. This view was based first on the finding of an early indirect and then a biphasic van den Bergh reaction in the serum, indicating a mixture of obstruction to the bile and toxic damage to the liver cells, and on the demonstration of impaired liver function by such methods as the lævulose and galactose tolerance tests. A. F. HURST and C. K. SIMPSON,[1] in a widely quoted paper published in 1934, sought compromise in dichotomy. They claimed that truly catarrhal jaundice resulting from a duodenal catarrh could be recognised clinically by the occurrence of anorexia, nausea and vomiting for a few days before the appearance of the jaundice, and could be distinguished from a primary liver affection in which the passage of bile in the urine and the jaundice itself were the first signs of disturbance. HURST regards the majority of cases in this country as belonging to the former group, while the epidemic in Sweden in 1936–37 was of the latter variety. E. R. CULLINAN,[2] however, doubted whether this apparently sharp distinction would stand scrutiny, and R. S. AITKEN [3] pointed out that pre-icteric gastrointestinal symptoms are often recorded in cases of subacute or acute hepatitis proved at autopsy, as well as in cases of jaundice attributed to drugs. Last year G. M. FINDLAY [4] reviewed the evidence that catarrhal jaundice, at least in its epidemic form, is a primary liver disease, quoting post-mortem records of 8 published cases in which were found degenerative changes in the liver cells, and round-cell infiltration in the portal tracts, with no changes in the bile-ducts or duodenum. He adduced as collateral evidence the occurrence of jaundice in people receiving injections of pooled human serum—convalescent measles serum in an example in this country and serum used in attempts at yellow fever prophylaxis in America. This seems to show that a filter-passing agent exists which can cause an illness in man closely resembling catarrhal jaundice, but it does not throw direct light on the mechanism of the jaundice. Further evidence came from Copenhagen in 1939, where K. ROHOLM and P. IVERSEN [5] obtained 38 small samples of liver by aspiration biopsy from 26 patients suffering from an "acute benign jaundice of the catarrhal type." They were sporadic, not epidemic cases; 18 of them had pre-icteric gastrointestinal symptoms. The biopsies showed a diffuse "hepatitis" characterised by inflammatory phenomena with a predominance of mononuclear cells, destruction of the trabecular arrangement of the liver cells, necrotic disintegration of the parenchyma cells, and a varying proliferation of connective tissue. The interlobular bile-ducts were normal, and ROHOLM and his colleague concluded that the theory of a catarrhal pathogenesis was not tenable. It seems more than probable, then, that in most cases of catarrhal jaundice, sporadic or epidemic, the pathological change is primary liver damage, and the agent may well be a virus. An increased incidence of the disease is to be expected in war-time, and has already been recorded among the German troops in the south of France.[6]

1. *Guy's Hosp. Rep.* 1934, **84**, 173.

2. *St. Bart's Hosp. Rep.* 1936, **69**, 55.
3. British Encyclopædia of Medical Practice, London, 1938, vol. viii, p. 104.
4. *J. R. Army med. Cps.* 1940, **74**, 72.
5. *Acta path. microbiol. scand.* 1939, **16**, 427.
6. v. Hoesslin, *Disch. med. Wschr.* 1941, **67**, 1060.

"I should like to come on my knees, or any other way, to have the benefit of any one who may have experience on what to do about neuropsychiatric and alleged neuropsychiatric cases. . . . I am frankly disturbed by the number of people turned down. . . . Sometimes it does become a serious public relation when 40 per cent, as I know of in one place, of the people have been rejected because they presumably are individuals who might become or were neuropsychiatric. If we get so that there are more than 51 per cent of that variety, I think the thing to do then is to have the kind of war that you can turn over to the majority, rather than expect the minority to wage it."—Brigadier General LEWIS B. HERSHEY, director of the Selective Service System. *J. Amer. med. Ass.* Nov. 29, 1941, p. 1894.

Annotations

TB ALMOST WHILE YOU WAIT

HITHERTO cultivation of tubercle bacilli has been too slow a process to be of much use in diagnosis, but D. M. Pryce[1] has described a micro-culture method which yields well-grown cultures within a week. Indeed, obvious signs of growth are visible with the $\frac{1}{12}$ in. objective in 24 hours, colonies may be just perceptible with the $\frac{2}{3}$ in. objective in 48 hours and in 3 days they are usually quite distinct. The method consists in drying a film of sputum on a glass surface, treating with 15% sulphuric acid, washing with water and incubating with blood hæmolysed with distilled water or 1% saponin. After 7 days' incubation the preparation is washed and stained with Ziehl-Neelsen and the colonies examined with the low power. The most typical colonies are long and stringy, later becoming twisted and coiled, but compact and bushy forms occur. Mycelial threads are found, and there is some suggestion that growth does not take place throughout the length of the thread but is restricted to certain points. Two methods of applying this dried-film culture technique are described. In one the sputum is spread on the floor of a petri dish. In the other one or more circular patches of sputum are spread on a glass slide, dried, surrounded with a ring of bakelite, hard fibre or glass immersed in melted soft paraffin, and incubated in a moist chamber or with a coverslip to cover the ring. The method was tried out on sputa from 48 cases from the male wards of Harefield Sanatorium. In 28 growth was luxuriant and immediately obvious, and in 6 colonies grew which were sparsely distributed. The remaining 14 yielded no growth. The technique can also be applied to pus and caseous material.

PLASMA IRON

ADVANCING biochemistry now allows the iron in blood plasma to be measured. When every precaution against hæmolysis is taken there still remains a minute but fairly constant amount of iron measured in *microgrammes* per c.cm. Vahlquist[2] gives the normal limits as 80–190 μg. per 100 c.cm. in men and 60–190 μg. in women with average figures of 122 and 104. In disease these levels differ; but if we are to apply this newly acquired technique we must understand what has recently been learnt about the absorption and transport of iron. Hahn, Whipple and their co-workers[3] used "marked" radio-active iron to investigate this problem. They found, as Widdowson and McCance[4] had done, that iron absorption is proportional to iron needs and that once it is absorbed there is little excretion of iron. When iron salts are fed to dogs rendered anæmic by bleeding the radio-iron in the plasma rises rapidly, reaching a peak within 4–8 hours and then rapidly falling to resting level in 6–12 hours after feeding. Radio-iron appears in red blood-cells in traces as early as 4 hours after feeding and after 24 hours is present in considerable amounts. Only about 10% of the absorbed iron can be accounted for as hæmoglobin iron, the rest presumably goes to iron stores. The plasma iron thus represents iron passing between the alimentary tract, the red-cell forming tissues and the iron stores, and we might expect that the response to a test dose of iron would give some indication of the presence or absence of iron-deficiency. Vahlquist gives a series of "iron-tolerance curves" in various conditions. In a normal person the test dose causes a rise of serum iron to about 300 μg. per 100 c.cm. in 4–6 hours, with return to normal level in 12 hours when fasting. The serum iron is below normal in anæmia after hæmorrhage, simple hypochromic anæmia of adults and children, and anæmia accompanying infection. In the first two a test dose causes a large rise in serum iron and after 12 hours the fasting level has not been regained; in the infection anæmia there is little response. In pernicious anæmia the fasting level may be as high as 360 μg. per 100 c.cm. and a test dose of iron causes little further increase; after liver treatment the resting serum iron falls to normal or below, and some iron deficiency is not uncommon during the remission period. The fasting level is also high in hæmolytic anæmias. Waldenström[5] thinks that in clinical work serum-iron determination will be most useful in detecting iron deficiency. He has described patients with epithelial symptoms, such as sore mouth and dysphagia, but no anæmia, who have been shown to be deficient by the iron-tolerance test and who have responded satisfactorily to large doses of iron—so-called "latent sideropenia." The test is also useful in detecting iron-deficiency in patients with a normochromic anæmia, in the remission phase of pernicious anæmia, and after gastric operations. There is one more finding that may prove useful: in acute hepatitis the serum iron may be raised as high as 370 μg. per 100 c.cm., whereas in obstructive jaundice it is unaffected. Serum-iron determination then may take its place in the long list of biochemical tests for differentiating toxic and obstructive jaundice.

This sort of technique has also been used to estimate the value of the various iron preparations now used therapeutically. A test dose containing a standard quantity of iron is given and the change in serum iron followed. Moore and others,[6] and Vahlquist, working on human subjects, found that ferrous salts were best absorbed, the rise in serum iron being unaffected by the absence of HCl in the stomach. Ferric salts, together with reducing agents like ascorbic acid or sodium formaldehyde sulphoxylate, gave figures equal to ferrous iron; ferric salts alone and other iron preparations were inferior. They noted that food influenced the absorption of iron, a subject discussed by Tompsett[7] who thinks that iron is only absorbed in the ferrous state.

Hahn, Whipple and their colleagues,[8] in their experiments with anæmic dogs on an iron-free but otherwise normal diet, got different results. They found the larger the dose of iron the smaller the percentage absorbed, so that it was best to give small divided doses. When conditions were optimal absorption was just as rapid whether the iron was given as a ferric or ferrous salt or even in an organic combination. The rate of utilisation of the absorbed iron was increased by previous iron feeding and by a diet of raw lean beef. By far the best results were obtained by *intravenous* injection of colloidal iron. How far these results on normal, temporarily anæmic dogs are applicable to abnormal anæmic men it is difficult to say. The use of intravenous iron suggests that a really efficient preparation to replace the unsatisfactory injectio ferri (*BP*) is needed. Enough has been said to show the usefulness of plasma or serum iron determinations. The methods available are, however, not simple, and for accuracy demand scrupulous cleanliness, iron-free reagents, and apparatus outside the usual range of laboratory equipment. The most favoured methods are based on the technique of Heilmeyer and Plötner.[9] A protein-free filtrate is prepared and the colour reaction between the iron in this filtrate and a substance like *o*-phenanthroline is used for the estimation. A photo-electric colorimeter or similar electrical instrument is necessary for accuracy. With these difficulties serum iron estimations are not likely to be popular, but

1. *J. Path. Bact.* 1941, **53**, 327.
2. Vahlquist, B. C. *Acta pædiatr., Stockh.* suppl. 5, 1941.
3. Hahn, P. F., Whipple, G. D. et al. *J. exper. Med.* 1939, **69**, 793; **70**, 443.
4. Widdowson, E. M. and McCance, R. A. *Biochem. J.* 1937, **31**, 2029.
5. Waldenström, J. *Nord. Med.* 1941, **11**, 2341.
6. Moore, C. V. et al. *J. clin. Invest.* 1939, **18**, 553.
7. Tompsett, S. L. See *Lancet*, 1940, ii, 365.
8. *J. exper. Med.* 1940, **71**, 731.
9. Heilmeyer, L. and Plötner, K. Das Serumeisen, Jena, 1937.

it is certain that the results of those workers who have access to suitable equipment will have an important influence on clinical ideas about what constitutes iron deficiency and how it should be treated.

INTRAVENOUS THROMBOSIS

AMERICAN writers have been studying intravascular clotting, particularly in the deep veins of the calf, as a cause of pulmonary embolism. Hunter and others[1] made a post-mortem study of the condition of the veins of the calf in an unselected series of cases over a period of almost a year. In autopsies on 351 adolescent and adult patients they found bilateral involvement of the veins of the calf in 110, unilateral involvement in 75. Thrombi formed in the veins accompanying the larger arteries far more often than in other veins and were present in the soleus muscle more often than in the gastrocnemius. Fatal pulmonary embolism was responsible for 3·13% of all deaths in their series; and in 45·4% of the deaths from such embolism thrombosed leg veins were considered to be the most probable source. Hunter and his colleagues maintain that, while no single cause can be held responsible for thrombosis of the leg veins, forced recumbency in adults who up till the time of an illness or operation have been active or at least ambulant is the chief predisposing cause. Consequently they recommend early and repeated exercise of the lower limbs in bed, by which they mean active, voluntary movements of flexion and extension of the feet, legs and thighs, not passive movements and massage; and they insist that these movements must start when the patient first takes to his bed, because clotting is liable to occur even within a few days. They believe that even very narrow clots are capable, by curling up, of blocking quite large vessels.

Ochsner and Debakey[2] distinguish between two types of intravenous clotting—thrombophlebitis and phlebothrombosis. Thrombophlebitis is an inflammatory process, due to some type of local change in the vascular epithelium, resulting in most cases in adhesion of the clot to the vessel wall; in phlebothrombosis there is no local change but a general increase in the clotting tendency of the blood, due in the main to venous stasis and alterations in the cellular or chemical constitution of the blood. The clots are non-adherent and for that reason more dangerous as a source of emboli. Clinically, the inflammatory type of thrombosis is easier to recognise, being accompanied by fever, leucocytosis and tenderness along the course of the vessel. In the non-inflammatory type the general and local manifestations may be so slight as to be missed altogether. A rise in the pulse-rate and tenderness on deep pressure in the calf are all that can be hoped for as danger signals. Ochsner and Debakey discuss the prophylaxis of intravenous thrombosis in surgical cases; re-establishment of normal cardiovascular function and correction of anæmia and dehydration may help to counteract the general tendency to clotting. Like Hunter, they believe that local stasis in the veins of the calf is an important contributory factor, and insist that the patient must be got out of bed early after major operations. In this they confirm R. T. von Jaschke's[3] finding that among 300 patients who were allowed to get up relatively late there were 2% of after-operation thromboses and 1% of fatal emboli, whereas in 387 cases in which early ambulation was encouraged the incidence of thromboses was 0·5% and there was no fatal embolus. In the Giessen University Clinic, the advantages of getting the patients out of bed between the second and the fifth days were shown by a fall in the incidence of thrombosis from 2·6 to 1·7%, and of fatal embolism from 1·4 to 0·6%.

In discussing the nature of the circulatory interference in the thrombosed limb, Ochsner and Debakey point out that in deep thrombosis—for example, in the femoral vein—the limb is white or cyanotic and cold. The coldness and pallor are not what one would expect in the presence of an inflamed vein, and are in contrast to the heat and redness accompanying thrombosis in the superficial veins. The appearance is in fact due to ischæmia, and observations suggest that vasospastic impulses arise in the thrombosed segment of the vein and cause contraction of arterioles and venules elsewhere in the affected limb. Experiments on animals have convinced these workers that the lumbar sympathetic ganglia are involved in the reflex, and they therefore treat cases of severe thrombophlebitis by lumbar-sympathetic block. The œdema of the limb is due to increased filtration caused by the rise in venous pressure as well as by anoxæmia of the capillary epithelium which is thus rendered unduly permeable. The loss of the pumping action of the arterioles is also a factor. Lumbar-sympathetic block produced by injection of .1% procaine hydrochloride along the lumbar-sympathetic chain has the effect, they say, of dramatically relieving the pain, and of causing the œdema to disappear. The perivascular fluid is carried away by restoration of the arteriole pulsation.

BALLISTOCARDIOGRAPHY

IT is getting on for 40 years since Yandell Henderson[1] recorded, by means of a swinging table and a system of levers, the movements imparted to the human body by the impacts of the blood and suggested that there might be a definite relationship between cardiac output and the amplitude of these movements. Starr has made a close study of the subject and in 1939 he concluded that this is the "simplest, easiest, and most rapid means of estimating the cardiac output that has been proposed."[2] The ballistocardiograph, as it is called, consists merely of a suspended table braced to prevent motion in any but the longitudinal direction, motion in this direction being opposed by a strong spring. The movement of the table is magnified 8000 times and recorded photographically. The principle is simple. As the heart drives the blood towards the head it propels the body in the opposite direction. This is immediately followed by a series of forces arising out of the blood striking the arch of the aorta and the curve of the pulmonary artery, and the downward movement of the blood in the thoracic and abdominal aorta; these forces drive the body towards the head. The normal record thus shows a sharp downward deflection (I wave) immediately followed by a sharp upward deflection (J wave). These two definite systolic waves stand out in contrast to the smaller, more variable waves which occur during diastole. With certain reservations the amplitude of the I and J waves corresponds to the cardiac output, which is estimated from measurements of representative high and low complexes. Among the physiological factors which alter the size and shape of the record are body size, large people having larger absolute cardiac outputs than small ones; age, the curves being smaller in old age; and heart rate. In investigating pathological conditions other discrepancies appear such as the difficulty in obtaining measurements in the presence of arrhythmias, the fallacy introduced by the presence of regurgitant heart valves, and the gross movements caused by the diaphragm in the presence of dyspnœa. In spite of all these drawbacks, however, the ballistocardiogram may be of considerable value. So far as the actual estimation of the cardiac output by this method is concerned, Starr and his colleagues[2] have found that the results compare reasonably well with those obtained

1. Hunter, W. C., Sneeden, V. D., Robertson, T. D. and Snyder, G. A. C. *Arch. intern. Med.* 1941, **68**, 1.
2. Ochsner, A. and Debakey, M. *New Engl. J. Med.* 1941, **225**, 207.
3. *Chirurg*, 1937, **9**, 274.

1. Henderson, Y. *Amer. J. Physiol.* 1905, **14**, 287.
2. Starr, I., Rawson, A. J., Schroeder, H. A. and Joseph, N. R. *Ibid.* 1939, **127**, 1.

by the ethyl-iodide method, and it must be borne in mind that in cases with pulmonary congestion most methods of assessing the cardiac output fail to give very accurate results. In his latest contribution to the subject Starr,[3] basing his conclusions on a study of more than 1000 records made in several hundred patients during the last five years, demonstrates the value of the ballistocardiogram in the investigation of certain clinical problems. For instance, in congestive heart-failure the results agreed with those obtained by more elaborate methods in showing that the majority of patients with congestive failure have subnormal circulations, and improvement of the circulation often coincides with clinical improvement. On the other hand, many records were obtained which demonstrated the presence of subnormal circulations in patients with no evidence of congestive failure. The records in patients receiving digitalis demonstrated a well-marked if transitory improvement in the circulation at a comparatively early stage, before there was any clinical evidence of digitalisation and before the amount calculated to be necessary to produce a full effect had been given. When too much digitalis had been given the record showed a definite diminution in the size of the complexes, indicating a decrease in cardiac output. The most impressive of Starr's records are those obtained in series from individual patients, such as those demonstrating the change in the circulation produced by occluding the affected limb in arteriovenous aneurysm, and the changes which occur in various operative procedures in patients with unsuspected heart lesions. It is refreshing in these days of steadily increasing complexity and elaborateness in apparatus to come across a method based on simple principles and so easily applied.

GROUPS B, C AND G STREPTOCOCCI

Lancefield, later with Hare, has classified hæmolytic streptococci into a number of broad groups based on a precipitin reaction with a carbohydrate substance specific to the members of each group; and she has shown that most strains from human infections (sore throat, scarlet fever, cellulitis, erysipelas, puerperal sepsis) belong to group A. Group B strains are primarily associated with bovine mastitis; group C with infections in the horse and guineapig; group D—present in dairy produce and the human intestine—is a hæmolytic variant of the enterococcus; and groups F and G are found in the human throat but G is also responsible for infection in the dog. Less is known about the other groups so far identified (E, H, K, L and M), but it is unlikely that they are associated with human infections. There is, however, increasing evidence that groups B, C and G may cause infection, usually mild but sometimes severe and fatal, in human beings, and many such infections occur in women after confinement or miscarriage. The studies of Lancefield and Hare,[4] Taylor and Wright,[5] and others on puerperal infection have established that: group A streptococcus is seldom present in the genital tract ante partum; that its presence there in the puerperium need not mean a severe infection (symptomless carriers have even been reported[6]); and that streptococci belonging to groups B, C, D and G may be present in the vagina both ante partum and in the puerperium.

In 1938 Fry[7] reported 3 fatal cases of postpartum infection with group B streptococcus; in 2 of them the infection was an acute bacterial endocarditis, and in the third there was multiple abscess-formation. Since then, Hill and Butler[8] and Macdonald[9] in Australia, Rosenthal and Stone[10] in America, and now Ramsay and Gillespie[11] in this country, have reported 9 additional cases of bacterial endocarditis due to streptococci other than group A; all except Macdonald's 2 cases were post partum or post abortum. The distribution of the 11 cases reported is 7 group B, 3 group G and 1 group C. Acute bacterial endocarditis is a rare infection due to various organisms, but particularly the hæmolytic streptococcus, staphylococcus and pneumococcus. Endocardial infection with group A streptococcus has in recent years been extremely rare, which throws into greater prominence these recorded infections with hæmolytic streptococci other than group A. The duration of infection may be short—2 weeks—or as long as 3–4 months; antecedent valvular damage is not usually present, and there is little or no response to sulphonamides. Cases infected by group B, the commonest group in the series of 11, are characterised at autopsy by massive crumbling vegetations. In cases infected by G and C the vegetations may be flat, raised plaques or more bulky and friable, and there may be some association between the character of the vegetations and the fibrinolytic activity of the causal streptococcus.

Ramsay and Gillespie found 48 puerperal cases yielding streptococci other than group A among 1163 admissions to the L.C.C. puerperal-sepsis unit at the North Western Hospital, during the four years 1937–40; and have made a clinical and bacteriological analysis of them. They found that 16 were group B, 12 C, 12 G, 6 D and 2 unclassified. With 2 exceptions the infection was mild, and in a proportion of the cases it was doubtful if the streptococcus had any causal relationship to the pyrexia. A high leucocytosis was a feature of the group G infections. Although streptococcal infection (all groups) was much less common post abortum (12%) than post partum (35%) in their series, streptococci other than group A were recovered from 43% of the postabortum streptococcal infections and from only 9% of the postpartum streptococcal infections. Probably the epithelium covering the genital tract suffers more trauma, and is therefore more susceptible to infection with the ubiquitous group A streptococcus, after full-term delivery than after abortion; moreover, the chance of exogenous infection from attendant doctor or nurse is greatest in the woman confined at term. The investigation emphasises the value of Lancefield grouping, and demonstrates what is becoming apparent from other studies—that streptococci belonging to groups B, C and G may not be so innocuous to man as was originally thought.

WHAT'S IN THE LOAF?

Mr. ARTHUR WOODBURN, parliamentary secretary to the Secretary of State for Scotland, has drawn the attention of the Ministry of Food to criticisms of the National Wheatmeal loaf, and received the following reply, dated Dec. 22, from Major G. Lloyd George, parliamentary secretary to the Ministry.

There is certain difficulty in conveying in a Statutory Prices Order operative instructions as to production which have to apply to all types of flour mills, and it is for this reason that while in the Flour (Control & Prices) Order, 1941, there is a rather wide legal definition, the technical milling instructions have been conveyed to millers in a separate letter which is much more precise. The retention of the wheat germ and the exclusion of the coarse bran are matters which have been dealt with in these instructions, and the minimum B_1 content and maximum fibre content laid down by the Medical Research Council are being used as standards in the tests which are made of National Wheatmeals from time to time. It is admitted that variation has occurred in wheatmeal bread owing to the different methods adopted by millers and by bakers, but it is understood that in both industries considerable improvement has recently been made. It is hoped that with the advice and help which the Ministry is giving them, all

3. *Amer. J. med. Sci.* 1941, **202**, 469.
4. Lancefield, R. C. and Hare, R. *J. exp. Med.* 1935, **61**, 335.
5. Taylor, J. and Wright, H. D. *J. Obstet. Gynæc.* 1930, **37**, 216.
6. Cruickshank, R. and Godber, G. E. *Lancet*, 1939, **i**, 741.
7. Fry, R. M. *Ibid*, 1938, **i**, 199.
8. Hill, A. M. and Butler, H. M. *Med. J. Aust.* 1940, **1**, 293.
9. Macdonald, I. *Ibid*, 1939, **2**, 471.
10. Rosenthal, A. H. and Stone, F. M. *J. Amer. med. Ass.* 1940, **114**, 840.
11. Ramsay, A. M. and Gillespie, M. *J. Obstet. Gynæc.* 1941, **48**, 569.

National Wheatmeal will conform strictly to the required standards, both as to vitamin B_1 and fibre. The latest test by the Ministry of samples drawn from all parts of the country show that 75 per cent. of the output of wheatmeal is up to standard. Minor differences of colour are unavoidable, due to variations in the wheats ground.

Lord Woolton is taking every possible step to help millers and bakers in this matter without interfering unduly with the maintenance of essential supplies. This especially applies in connexion with the smaller country mills which it is desired to keep in constant production and which have experienced considerable difficulties.

The position appears to be that the Ministry of Food issued a statutory order so loose as to permit a mixture of white flour and bran being made into 85% flour. That was an order and had to be obeyed. In addition they gave supplementary instructions to the millers which, if obeyed, would result in the production of an 85% extraction flour as intended by the Medical Research Council; but it was not compulsory to obey these. The smaller firms mostly obeyed both order and instructions, but a few larger firms disregarded the instructions and respected the statutory order only. Major Lloyd George's letter suggests that millers are now adhering more closely to the supplementary instructions, and the quality of national wheatmeal should therefore improve. Certainly some disinterested body should be watching the composition of the flour.

MENTAL STATES IN OLD AGE

IT does not make for progress when clinical medicine becomes subservient to the autopsy findings. This is well illustrated by G. W. Robinson,[1] who points out that, on pathological grounds, the mental states of old age have in the past been attributed either to arteriosclerosis or to senile atrophy of the brain; and both conditions being progressive and irreversible, the physician's task has seemed purely custodial. This idea persists, although research has shown that the correlation between clinical symptoms and structural changes in the brain is, to say the least, dubious. Severe senile and arteriosclerotic abnormalities are found in the brains of elderly people with no history of mental symptoms; and the intensity of mental symptoms does not correspond to the degree of damage found post mortem. The mental picture of elderly patients shows a great variety. The deterioration of memory and intelligence characteristic of senility and arteriosclerosis is often difficult to assess, because emotional symptoms or excitement and confusion interfere with the application of the usual clinical tests. Every criterion which will help to disentangle this mixed group of psychoses must be welcome to the clinician. It was Krapf[2] who introduced a more functional view of the circulatory disorders of the brain by studying psychoses in hyperpietic patients. He described two types of psychotic symptoms in close association with increase in blood-pressure: twilight states with confusion, and affective episodes similar to those observed in epileptics. Both syndromes are transient, lasting a few weeks or some months at most and ending in restitution except when an apoplectic seizure occurs. He also found characteristic personality changes associated with hypertension, distinguishable from those in arteriosclerotics and seniles. These proved to be reparable to some extent and their functional nature was evident from the observation that the patient could seem his former self for a short time under the pressure of an emergency. Robinson reviews other work having a similar bearing. H. E. Clow, for instance, found an unexpectedly favourable prognosis when he analysed 100 cases of psychoses accompanying cerebral arteriosclerosis. He did not differentiate hypertensive from arteriosclerotic cases, but he went carefully into their history and discovered, in most of them, contributory physical as well as psychological factors upsetting the limited adjustment of the person with an arteriosclerotic brain and precipitating the psychosis. No less than 49 of his patients returned home after having been treated by psychotherapy combined with the application of general principles of internal medicine. There seems to be justification for revising the diagnoses of arteriosclerotic and senile psychosis and for restricting their use; it may be, as Robinson suggests, that "the conditions diagnosed as arteriosclerotic insanity are really toxic delirious reactions." In his own series of 50 patients over the age of sixty, 35 recovered sufficiently to return home; when he followed up 20 of these after six months only 2 had relapsed and 1 had died. Among other procedures, he treated all depressive states with convulsions induced by leptazol, irrespective of age, one of his patients being eighty-four when he gave him epileptic fits. This seems rather rough handling, but in view of the successful treatment of involutional melancholia by the same method—confirmed by many critical observers—there seems to be no reason for setting an age-limit. The problem of psychiatric diseases among the elderly will become more urgent with the shift towards longevity in the population which will probably be even more pronounced after the war. The present wave of therapeutic activity in psychiatry seems to offer some hope for a group of invalids who, till now, have been relegated indefinitely to institutions.

1. *J. Amer. med. Ass.* 1941, **116**, 2139.
2. Krapf, E. Die Seelenstörungen der Blutdruckkranken, Vienna, 1936; *J. ment. Sci.* 1937, **83**, 534.

BETWEEN SISTER COLLEGES

THE Royal College of Surgeons of England has just received a gift of £2000 from the American College of Surgeons to help towards its restoration. This spontaneous gesture of sympathy immediately followed the account of the damage done by enemy action in Lincoln's Inn Fields given by Surgeon Rear-Admiral Gordon-Taylor when he attended the recent congress of the American college. A further sum has been allocated to cover the cost of an appeal to U.S. surgeons to assist in the restoration. The gift is a landmark in the history of the college and a cement that will bind still closer the ties of friendship initiated during the last war, when a replica of the silver-gilt mace was presented to the American college by British consulting surgeons to the Forces. The gift of American surgeons is being used to meet some of the immediate difficulties with which the English college is faced. The library is being reopened and the lecture courses, until now enjoying the hospitality of RSM House, resumed. Offers of help have now been received from all parts of the world, and with such general sympathy and assistance the college council feel no doubt of their ability to restore their buildings and to make their museum once more worthy of the headquarters of British surgery.

Dr. GRAHAM STEELL, emeritus professor of clinical medicine in the Victoria University of Manchester, died in London on Jan. 10, at the age of 90.

We also regret to announce the death on Jan. 8 of Mr. OSWALD ADDISON, emeritus surgeon to the West London Hospital, and consulting surgeon to the Hospital for Sick Children, Great Ormond Street.

POSTGRADUATE LECTURES AT EDINBURGH.—During the spring term the following Honyman Gillespie lectures will be held on Thursdays, at 4.30 P.M., at the Edinburgh Royal Infirmary: Jan. 22, Dr. Harold Scarborough, the vitamins in relation to hæmorrhage; Jan. 29, Mr. J. M. Graham, the surgery of the hypopharynx (pharyngeal pouch); Feb. 5, Dr. W. F. T. Haultain, œstrogenic therapy; Feb. 19, Mr. K. Paterson Brown, acute intestinal obstruction; March 5, Mr. David Band, urogenital tuberculosis; March 19, Dr. Douglas Miller, the albuminurias of pregnancy.

Special Articles

DUST DISEASES IN RUSSIA

UNTIL the last few years silicosis has never attained the importance in Russia that it has in the west, for the industry of the country was mainly agricultural. But the vast development of heavy industries in southern Russia and beyond the Urals has brought with it the industrial diseases with which we are unhappily familiar. A great deal of useful research on the dust diseases, mostly among coal-miners, has been done by the Donets Institute for Labour Hygiene and Occupational Diseases, and some of this is summarised in a series of papers which has reached England through the Soviet Embassy. These cover the clinical, environmental and experimental aspects, and show a thorough familiarity with the mass of western work on the subject. They are supplemented by a monograph on tuberculosis and pneumoconiosis among underground workers by I. I. Moshkovsky.

The plan of this Ukrainian research resembles that of the M.R.C. investigation in South Wales, and there are many points in common in the findings in the Donets and those reported by Cummins and Sladden [1] and Gough [2] from South Wales. There is the same distribution of pneumoconiosis between the soft coal and anthracite fields, with the latter suffering far more heavily; the same surprising lack of any special tendency to tuberculosis among miners; and the same slow development of a disabling chest condition in a proportion of the older miners. The numbers of miners who have been investigated are also roughly comparable. The development of pneumoconiosis described by M. B. Ziprinsky is characterised by the usual increase in X-ray density of the network of the lung structure, widening of the root shadows, sclerosis of small and large bronchial walls, and the appearance of nodules which gradually increase in size and number. Finally the nodules run together and emphysema develops. Thickening of the pleura and bronchiectasis are not uncommon.

The view generally held in England and America is that silicotic nodules result from the presence of silica. All silicotic tissue contains excess silica, though the reverse is not necessarily true.[3] Whether the nodules found in the lungs of coal-miners are of the same ætiology has not been finally decided. Most observers take the view that it is the silica in the coal that does the damage, and that the coal itself acts chiefly as a diluent. The coal-dust may by its very mass have some mechanical effect on the lung but is not thought to have any specific effect like silica. Badham and Taylor [4] dissent from this view, and in an elaborate investigation on Australian coal-miners demonstrated that coal-dust itself cannot be disregarded as a factor in producing nodules. Among the Russian workers V. A. Ravvin and P. A. Eniakov believe, on experimental evidence, that coal-dust as such (and not its mineral admixtures) is the basic factor which determines the changes in the lungs in occupational anthracosis. This conclusion is a highly important one, and it will be interesting to see if the research being done as part of the M.R.C. investigation confirms it.

PREVENTION

Experience in South African mines has been closely studied in Russia, and D. E. Shlimovitch and A. V. Heimar agree that the pneumatic drill is chiefly to blame for generating dust, and that wet boring, good ventilation and correct handling of explosives are needed to suppress it. Heimar finds that electrolytes and naphtha and resin soaps increase the dust-settling powers of water sprays; in this he differs from the Coal Dust Research Committee in its 1941 report, but both agree that dust can largely be controlled by the intelligent use of sprays. The public-health measures in the Russian mines seem to have been outstandingly good. All applicants were medically examined and only those of favourable physique were accepted; examinations were repeated regularly, workmen when necessary being transferred to lighter jobs. Medical and sanitary services were close to the place of work, so that help could be given quickly in case of accident, and the health of the workers was kept constantly under observation. Hot and cold showers and facilities for drying and changing clothing were provided at all collieries. Workers were supplied with special garments for mining and did not return to their homes in the clothes worn on their working shift. They were given a free allowance of milk daily, a month's holiday every year, and were liberally treated over hospital care, insurance and pensions. All this good work, prospering only a few months ago, must have been suspended by destruction in the Donets coal-mining industry.

1. Cummins, S. L. and Sladden, A. F. *J. Path. Bact.* 1930, **33**, 1095.
2. Gough, J. *Ibid*, 1940, **51**, 277.
3. King, E. J. and Belt, T. H. *J. Path. Bact.* **51**, 269.
4. Badham, C. and Taylor, H. B. *Ann. Rep. Dept. publ. Hlth, New South Wales*, 1936, No. 19, p. 100; 1939, No. 20, p. 68.

USE OF X RAYS IN MANIPULATING FRACTURES

IN both Britain and the United States there has been an increasing number of casualties among surgeons using X rays, and the British X-ray and Radium Protection Committee have therefore drawn up the following memorandum.

There are two ways in which X rays may be used in the manipulation of fractures of the extremities. The first is by screening or taking radiograms (which can now be processed very rapidly) when the surgeon believes he has attained correct position; radiography should be the usual procedure adopted, and should involve no exposure of the hands or person to a direct beam of X rays. The second is by actually manipulating the fracture under fluorescent-screen control. This inevitably produces conditions of grave risk, and cannot be rendered safe, for the surgeon's hands must at times come into the direct X-ray beam. Only in exceptional cases should the second method be adopted, and then only on the responsibility and under the direction of the senior surgeon; such work should never be delegated to juniors. The same considerations apply to the removal of foreign bodies under X rays.

ESSENTIAL PRECAUTIONS

The operating room should be satisfactorily darkened. Lights should be dimmed as far as possible before screening, and no lights should face the surgeon. The previous films on the case should be seen and memorised, and not scrutinised in a bright viewing box immediately before the manipulation. The surgeon must prepare his eyes for screening. This takes a certain amount of time, varying with the individual, but a minimum of five minutes in the dark should be allowed. Alternatively a single red light may be used in the room, or the surgeon may wear dark (preferably red) goggles for some minutes before screening is begun.

The X-ray apparatus should be operated by a radiographer who has been specially trained for this work. He should be given definite instructions by the radiologist as to the limits within which he must use the apparatus. These limits should be governed by hard and fast rules, drawn up by the radiologist in conjunction with the surgeon in charge, and not to be varied because a surgeon finds himself in difficulty. The radiographer should keep a log book recording the factors with actual times of screening. This book should be signed by the surgeon after each operation, and should be inspected regularly by the radiologist.

In general the recommendations of the British X-ray and Radium Protection Committee should be followed.

The tube-screen distance should not be less than 20 or more than 30 in. The apparatus should be set to give not more than 65 kV. For thin parts and children a lower kilovoltage will be adequate. *The maximum screening current that should be used is 3 mA.* As a safeguard against excessive screening current, an automatic cut-out can be incorporated in most X-ray sets at a small cost; this will come into operation if the selected factors are exceeded.

All apparatus should be shock-proof. An aluminium filter of 1 or 1·5 mm. should be fixed in the aperture of the X-ray tube so as to furnish a total filtration of not less than 2 mm. of aluminium. Cones or cylinders to limit the X-ray field are essential; these should be of such size that the illuminated area falls well within the limits of the fluorescent screen. An illuminated area of 5 in. circle, or 4 in. by 6 in.

rectangle, is ample for this type of work. The radiographer should constantly watch to see that the X-ray beam is kept within the limits of the fluorescent screen. It is his duty to point it out to the surgeon if this essential factor is not complied with. If the X-ray tube and screen can be coupled to ensure this, it is a major safeguard which should be adopted. An integrating time switch is useful. All exposures should be made with a timing device. The fluorescent screen, faced with lead glass, should be of modern manufacture and in good condition. It must have handles that afford protection to the hands. A mechanical device for holding the screen is, however, preferable.

Under these conditions screening and radiography between manipulation can be carried out safely, provided always that the hands of the operator or of the assistant who holds the screen or films do not come within the direct beam.

DANGERS OF SCREENING

Manipulation of fractures under screen observation should only be employed in very exceptional cases, preferably, if possible, with a radiologist in attendance. The time occupied in such manipulation should be strictly limited to 1 min., and this should be accurately computed by the radiographer in attendance. It should be recognised that, even with one rapid manipulation with the hands in the direct beam, the safety tolerance dose may be considerably exceeded. *If the surgeon is willing to take this risk, it is entirely on his own responsibility.* In the direct beam the exposed hands are subject to the daily safety tolerance dose in the prescribed conditions in about 2 sec. at 20 in. At shorter distances—e.g., when the reflecting fluoroscope is employed—the hands are nearer the tube and the dose is increased.

The cryptoscope (the fluorescent screen fitted to the head and supplied with a hood) is a very dangerous device, and should never be used.

Operating conditions vary greatly in different hospitals, and each should draw up its own set of regulations. A list of specific safety instructions should be posted in the department concerned.

MEDICINE AND THE LAW

A Death after Phenothiazine

AN inquest was held on Jan. 2 in Birmingham on a girl of 6 years who died of acute hæmolytic anæmia after taking phenothiazine tablets for suspected threadworms.

When the mother was visiting her doctor a month ago she mentioned that her little girl had some itching of the anus at night, though otherwise in good health. No worms were seen by either the mother or the doctor. The doctor gave the mother 24 half-gramme tablets of phenothiazine and told her to give one four times a day. The child was attending school. She took three tablets on Dec. 13 and four daily on the 14th, 15th and 16th. On the 17th the mother noticed that the girl was pale and gave her only two tablets. This made a total dosage of 8·5 g. and the drug was then stopped. On the 18th the child had a mild headache and her face looked slightly yellow. The headache persisted until the 20th, but she still attended school. On Dec. 21 (Sunday) her mother left her in bed and told the doctor on the telephone that she was still pale; he ordered 3 teaspoonfuls of syrup of figs. Next day (22nd) the child vomited, and she stayed in bed. On the 23rd she was taken to the doctor's surgery and he sent her at once to the Queen Elizabeth Hospital. On admission there she looked pale and very slightly jaundiced; her temperature was 101° F. and pulse rapid. A blood-count showed: red cells 1,250,000; hæmoglobin 26%; white cells 16,850; normoblasts 1%, reticulocytes 22·6%; platelets 236,000 per c.mm. On the 24th she was given a drip transfusion of 10 oz. of whole blood in 3 hours. This was followed by a rigor and rise of temperature to 106·8° F. and of pulse-rate to 160. She gradually became unconscious and died at 3 A.M. on Dec. 25, about 12 hours after the transfusion.

At autopsy Prof. G. Haswell Wilson found the child was fairly well nourished, with a just perceptible jaundice of the skin and conjunctivæ. Apart from pallor the heart and lungs showed nothing of note. The liver was pale, but there was nothing in the gross appearances to suggest a toxic hepatitis. The spleen was firm and dark red. The alimentary tract showed no abnormality. The brain contained multiple small hæmorrhages in the region of the corpus callosum. The rib marrow was watery and dark, and the femur marrow abundant and dark. Sections of liver, heart and kidneys showed no microscopical evidence of toxic damage. Professor Wilson considered the appearances of the blood, spleen and marrow consistent with a hæmolytic anæmia; he found nothing to connect the blood-transfusion with death.

SURGERY IN MENTAL DISEASE

DELIVERING a Hunterian lecture at the Royal College of Surgeons on Jan. 12 Mr. F. W. WILLWAY described his technique in prefrontal leucotomy. He carried it out, he said, with the patient under intravenous 'Pentothal' and local anæsthesia. The trephine openings were made on each side, 3 cm. behind the anterior margin of the outer rim of the orbit and 5 cm. above the zygomatic process, and the white matter of the frontal lobe was divided with a flat-bladed knife. There was danger of damaging the branches of the anterior cerebral artery, and he had lost one case by this accident. In undertaking any operation, however, the surgeon had to weigh the operative mortality against the seriousness of the complaint and the prospect of relief. The chief risk to mentally disordered patients subjected to prefrontal leucotomy was that they would fail to improve; none of the survivors had so far been made worse by the operation. Of the published cases summarised by Dr. E. Lilian Hutton,[1] 46 had been done by Moniz, the originator of the operation, with no deaths. In his own series of 16 cases, Mr. Willway said, there had been 2 deaths: that already mentioned, and another due to bronchopneumonia and cardiac failure. There had been apparent recovery in 7 cases, 4 had not improved, and in 3 it was too early to give an opinion. Of McKissock's 2 cases, 1 had apparently recovered and 1 had not improved. It was impossible at this stage, he said, to speak of more than apparent recovery, since the histories were still too short for any certain opinion. Cure depended as much on the after-treatment and on post-operative rehabilitation as on the operation. Before operation most of his cases had been uncoöperative or inaccessible, and had had courses of electrical therapy to which they had responded for a time. He showed a film of the operation, and photographs of a brain on which the operation had been performed post mortem; the whole depth of the white matter of the frontal lobe was seen to be divided. He then reviewed his series of 15 cases. Of these, cases 1–7 and case 9 have already been reported in our columns by Dr. Hutton [1] and she described case 10 at a meeting of the Royal Medico-Psychological Association last November.[2] Case 8 was that of accidental death already noted.

CASE 11.—A girl of 20 with 8 years' history of schizophrenia. Habits dirty; dangerous at times. Had had a remission lasting a month after electrical therapy. After operation, in August, 1941, her hallucinations disappeared, her work began to improve and her behaviour, though not her mental state, is now normal. She is a quiet and happy inmate of the hospital.

CASE 12.—A woman of 28 who had had schizophrenia for 4 years. She had had shock therapy. Seven weeks after operation in July, 1941, she was able to travel home alone to Yorkshire, and her family find her quite normal.

CASE 13.—A man of 36, a D.Sc., with 10 years' history of paraphrenia. In 1935 he committed a brutal murder. After prefrontal leucotomy in October, 1941, he was at first much improved, but he has since behaved suspiciously from time to time.

CASES 14, 15 and 16, Mr. Willway said, had only had their operations during the last two months, and though it was too early to give an opinion on the effect, he hoped for recovery in at least 2 out of the 3.

The longest case showing apparent recovery had now been well for 14 months since operation, and this was longer than his longest previous remission. There had so far been no postoperative epilepsy in any case. At present, if electrical convulsion therapy gave a temporary remission, it was taken as an indication that the case might be

1. *Lancet*, 1941, ii, 3. 2. *Ibid*, 1941, ii, 739.

suitable for prefrontal leucotomy; but more work was needed to assess what value such a remission had as an indication. In his series, 5 of the 7 patients who benefited from operation had shown temporary improvement after electrical therapy. Where the patient was demented or mentally deficient benefit could not be expected from the operation: it could only be hopefully applied in cases of mental disorder. He believed that after the operation mental function became reorganised. And though he thought it likely that in years to come the method would be regarded with either laughter or horror, it was at present giving results in cases which otherwise seemed hopeless, and he proposed to go on doing it until some better method was found.

SCOTLAND

CANADIAN ORTHOPÆDIC UNIT

IN the closing days of the year Scotland welcomed to its shores an orthopædic unit specially sent by the Canadian Red Cross in response to an appeal for assistance of this type. Since the last war orthopædic provision in Britain has been considerably developed, but it is true to say that in this, as in other fields of hospital activity, Scotland has tended to lag behind England. There have certainly emerged several excellent centres of orthopædic activity north of the Tweed, and of recent years the development of fracture clinics has tended to promote a wider interest in orthopædic care; but such efforts as there have been have been sporadic and largely dependent on individual enterprise and initiative. The creation of new emergency hospitals up and down the country has made many additional beds available, and it is well known that orthopædic units have been created in several of these new hospitals. It is probably no exaggeration to say, as Dr. Davidson said in welcoming the Canadians, that now for the first time Scotland has prepared a foundation on which to build a complete orthopædic scheme. Scotland's main problem in developing orthopædic work has been to secure trained personnel, and the arrival of the Canadian unit is bound to be of considerable assistance in this direction, not merely in terms of numerical value but because the unit may well come to act as a centre for the training of yet more personnel, and must in any case foster a new interest in the whole question of orthopædics. It is understood that it is proposed to make this Canadian unit responsible in the first instance for some 300 or 400 beds in a hospital in central Scotland, where there are already orthopædic cases under treatment, and it will be instructive to watch the differences in outlook and differences in method. The Canadian nurses, for instance, are probably accustomed to eight-hour spells of duty and to shorter term of night duty than those usually prevailing in this country. But growing pains are healthy, and this Canadian gesture will receive a very general welcome. Dr. A. B. Le Mesurier and Miss Hunter will be making an important contribution to war surgery; they will also be forging another link between Scotland and the Dominion which will long outlive the war.

A WATCH ON THE WAR EFFORT

The Secretary of State for Scotland hopes to tighten up measures for the protection of health in workshops. There is already some evidence of a heightened incidence of disease, notably tuberculosis, among young workers. General practitioners have been invited by the Secretary of State to seek the coöperation of his department in dealing with the observed reaction of war conditions on health. Doctors are asked to refer patients in this category to the regional medical officer with a view to a thorough overhaul, with recourse if necessary to hospital and convalescent beds. In the first instance the scheme is being applied to the industrial areas of Clydeside—the city of Glasgow and the counties of Lanark, Dumbarton and Renfrew. Before the war the Department of Health made an investigation into incapacities of three-months duration, and the present approach may be regarded as a sequel of that earlier work, made possible by the increased number of hospital beds available under the emergency casualty scheme. This is an experiment, as the Secretary of State remarks, which may lead to big things.

In England Now

A Running Commentary by Peripatetic Correspondents

"IF only we had been at home, now," we said, "we could really have done something about this paper collection, but evacuees like us simply haven't got any waste paper or waste anything." Yet when we turned to on Sunday afternoon there seemed quite a lot after all. For quick results, we found, there is nothing like books. It takes something like ten out-of-date receipts to make an ounce of waste paper, and those medical journals that we always mean to get bound some day but there are some numbers missing tot up to only 7½ oz. each. But a good out-of-date textbook or instrument catalogue tips the scale at anything up to 7 lb., and even Recent Advances weigh a pound and a half. In sweat per ounce books come out far the lowest, for it takes little longer to decide to part with a textbook of our youth than with an unanswered letter of our youth, and one may outweigh the other by half a stone. If you are pressed for time, then, our advice would be "Tackle your Bookshelves First," bearing in mind that the Forces (through any post office) can make better use of readable fiction than even the Minister of Supply.

* * *

Of course I ought never to have been asked to examine the village Red Cross women in first-aid, or perhaps I ought never to have accepted the honour, but I am always apt to jump recklessly on to any bus that is passing so as not to miss it. Seven years ago, when I was last in general practice, it was all much simpler. There was a tacit understanding that at least 80% of the candidates must be passed. A lower percentage was apt to sap local enthusiasm, besides being a nasty let-down for the colleague who had done the lecturing. From the lecturer one usually ascertained which of the old trouts could be ploughed safely without wrecking the whole outfit, and all was gas and gaiters. Nowadays it is a much more serious matter, and quite rightly so. I received a list of questions, some simple for the novices, and some more exacting for the certificate-collectors. That was all right. Under each question was a reference to the exact page in the Manual where the clever examiner could look up the right answer beforehand (or surreptitiously on his lap below table-level in an emergency). No. My troubles arose when we wandered from the point. "But supposing that weren't sufficient to stop the hand from bleeding?" I asked incautiously. "Apply a tourniquet to the brachial artery," was the prompt reply. Now my dispenser had primed me that the Mobile Unit had had a printed Government circular warning the members never on any account to use a tourniquet. (She couldn't and didn't attempt to reconcile this with the parcel of tourniquets they received less than a fortnight later. Perhaps the parcel was the work of a fifth columnist or an *agent provocateur*.) So I said very mildly, "Hm. Ever heard of Pad and Flexion?" The candidate was horrified. "Oh yes, but we must never do that, we've had to cross that out of our books."

Supposing the Mobile Unit is called out to an incident in that village and has to collaborate with the First-Aid Point, who is going to win? Will they thresh the matter out while tired fingers maintain digital pressure? Or will they adopt both procedures fifty-fifty in a true scientific spirit of inquiry and see which patients do the better?

My dispenser, on seeing the questionnaire, remarked sardonically, "Lucky for you that you didn't have to ask the latest treatment of burns." I quite agree.

* * *

It is my present lot that I have to make rather frequent railway journeys between what, after an air-raid, the authorities term a "north-west inland town" and London. I have always regarded railway journeys, even those long ones such as the Trans-American or Trans-Australian, as periods of perfect rest. To me the joining of a train on a journey is the next best thing to joining ship. The moment when we are all settled down and the guard waves his green flag and blows his whistle is to me almost as good as seeing the last rope cast off the last bollard and watching the widening interval

between ship and wharf. One long-distance railway system on which I travelled in days gone by had as its slogan "Travel by rail and relax." I think it was a good slogan, I always do relax on a railway journey. I do not read newspapers or magazines. I do not try to work, though unmarked examination papers may bulge my suit-case. I do not read correspondence or try to figure out costs or estimate quantities in contracts as is I fancy the occupation of many of my fellow travellers in the restaurant car on my present journeys. I relax. I look out of the windows at the countryside through which we pass. When I am tired of that, or when lunch and its accessories have induced somnolence, I sleep. This habit of looking out of the window has made me very familiar with the sequence of canal, hedgerow, pasture, farms and towns that punctuate the route. I know that when I see a certain clump of well-grown elms at the end of a derelict, weed-grown pasture, we shall cross a bridge over a sluggish, meandering river and then come upon a cluster of red brick cottages and a sheet of water from which some ramshackle apparatus appears to dredge something that someone seems to need. The name of the place I do not know. I cannot learn it from the station through which we next pass. It might be Hovis or it might be Gentlemen; but I fancy it is neither of these, since, in these times of war, such names are probably only employed to deceive the possible invader. I know when I see the first signs of chalk rubble in the cuttings through which we pass how far we are from London, what is the name of the next station, and when we shall come into view of the magnificent beeches clustering the rise to the east of the railway.

This journey that I make so frequently nowadays is one that I have resumed after an interval of rather more than thirty years. Between 1909 and 1939 the whole sequence was forgot in absence. From my window today I see great changes. I know it is possible that not only the green lane of my love has changed but that change may have been in me and possibly I have looked at the scene with different eyes after so long an interval. But this is not the whole of the story. Change, vast change, there has been in the English countryside as seen on this journey. Change, sad change, there has been; and this change is more apparent to one who has not watched its progress than to those who have lived through it. It must be within the experience of every medical man that he may not notice the decline in health of someone with whom he is in daily contact—a member of his family maybe—whereas the change will appear striking to an outsider who has not witnessed the slow processes of decline. It is this outsider's privilege I would claim in making observations from a railway carriage window over a limited area of the English countryside.

To deal first with what is nearest at hand—the cuttings and embankments of the railway track. These floral reserves have ever been a delight to me. But now beyond the glory of the primroses and cowslips, the bluebells, scabious, snapdragon and campions, there is the ever-present sign of the rabbit—millions of rabbits. It is a strange thing that there are intelligent people in England who fancy that Australia is on the verge of ruin owing to the rabbit pest, and imagine that England holds only enough rabbits to satisfy the just demands of "sport." On my railway journey there are now more evidences of the ravages of rabbits than could be seen in any comparable journey through the agriculturally developed areas anywhere in Australia. I travel, as a rule, by the most convenient day-time train so as to have the full of the day in which to see the country. Even from this train I see rabbits by the hundreds disporting themselves in the shade at high noon. By the afternoon train, when dusk is falling, I may see as many rabbits within a hundred yards of the rail as I would see in a long motor trip through the agricultural areas of three Australian states. I do not know if there are any reliable statistics to show what damage rabbits inflict every year on the food crops of England. I have seen it stated in print that it is in the neighbourhood of £70 million. How it comes about that this vast increase in the rabbit population of our countryside appears to pass unnoticed is something beyond my comprehension. It is doubtless because English people have never known what a real rabbit plague is capable of effecting. Maybe there will one day come in England that combination of season and of food-supply that, in some subtle way, permits these things that will give them this salutary experience. All other contributory factors and predisposing forces are at hand; only that subtile something that turns abundance and high fertility in normal times into plague proportions is lacking. Judging by the experience of other lands, it may come at any time. Meanwhile it is strange to read in local country papers that the land-owning bench of magistrates has sentenced some labouring man for the snaring of a "coney." This man is fined or sent to prison for his offence: but we must remember that he is the same person, performing the same office, as the rewarded vermin exterminator of more enlightened lands. Rabbits, their possibilities as a plague threat to our vegetable food-supplies, their possibilities as a source of meat-supplies, their control and the responsibilities of land-owners who preserve them for "sport" towards agriculturists to whom they are a pest, seem to be in more need of legislative control than is at present apparent to one who regards England from the windows of a railway train.

* * *

Two sorts of scientists speak from public platforms: those who think they have something to say and those who think they have to say something. The former represent the prophets of old, prefacing their message with a "Hearken-unto-me-ye-people"; the publicists, like American commercial broadcasters, think they will be heard for their much talking. These types were about evenly represented at the conference on Science and the War Effort, organised by the Association of Scientific Workers in Caxton Hall last Saturday and Sunday. The newspapers, badly coached, described them as "The Back-Room Boys," although the object of the conference was to place Science, like Uriah, in the forefront of the battle. And who could keep Prof. Jack Haldane in a back room, or describe Sir Daniel Hall as a boy? Indeed, at tea I found myself surrounded by venerable men: on one side, Mr. H. G. Wells was still a little petulant about that speech to the British Association which he was unable to deliver in full; on the other side, Professor Bigwood, M.D., of Brussels, who had been asked beforehand to say something on the food situation in Belgium, made no complaints about the bad organisation whereby there was not time for him to speak. And opposite me Dr. Walter Elliot was telling us that education should stop between the ages of 14 and 18; I dared not ask such a distinguished medical ex-minister how we were to fit the bulky medical curriculum into the few years he would allow us, or how his long vacation would be occupied.

The main session on the first day was concerned with Food and Agriculture. Sir John Orr, recently back from his tour of America, spoke of the recent advances in the science of nutrition and their impact on agricultural and economic policy. He has said it many times before, but never with such mastery; and it cannot be said too often. He has for long been a voice crying in the wilderness, and he urged scientists to leave their back room and join him in liquidating the scandal of malnutrition. A food policy based on human needs could be made the spear-head for economic prosperity based on the solid foundation of the promotion of human welfare. This general theme was amplified by Dr. H. M. Sinclair of Oxford, who summarised the recent evidence of the extent and effects of malnutrition, including the recent work in Canada which has shown that by proper feeding the infantile and maternal mortality-rates can be enormously reduced. He advocated supplying people as a temporary measure with a supplement containing the known vitamins in suitable amount, the best excipient probably being a biscuit. But a professor of pathology criticised this idea, because natural vitamins were tasty, whereas synthetic vitamins (or those extracted from pine-needles or yeast) were nasty.

The first day was somewhat marred by the search-lights and cinecameras of the Ministry of Information. But the second day had but one high-light: a brilliant summing-up of the conference by Prof. J. D. Bernal, who assured us that the constructive suggestions and destructive criticisms produced at the conference would not be allowed to fall by the way-side.

Parliament

ON THE FLOOR OF THE HOUSE

MEDICUS M.P.

THE House met on Jan 8, the earlier date insisted on by the Commons as against the Government's proposal of a longer recess, and the occasion for the meeting was all too clear. The grave position in the Far East is one that demands the attention of Parliament no less than that of the Government. It is all the more necessary that Parliament should have the opportunity of freely expressing its views and its criticisms and demanding information because the ordinary machinery of Opposition is in abeyance. Criticism the Government got but information the Government did not give, at least not in the quantity the House desired. As the *Times* somewhat acidly remarked, Mr. Attlee's statement, given in the absence of the Prime Minister, "could hardly have been more economical of information." Many members evidently did not expect much information, for although the House was very full at question time it was, for a major Government statement, relatively thin when Mr. Attlee was speaking.

The speech was a political rearguard action, fought by the Government against expected criticism and awaiting the reinforcement of the Prime Minister on his return from conferences in Canada and the U.S.A. Mr. Attlee said, "It is difficult to appreciate just what the scale of the war is in the Far East," but the possibility of "a sudden attack by Japan . . . has been present in the minds of the Government since we took office." In referring to the question of an imperial war cabinet and a supreme war council, Mr. Attlee said it would be a mistake to assume that the 1917 organisation would necessarily suit the conditions of this war. The speech, in fact, did not contribute much to the discussion, and in particular it did not deal with India which is threatened by attack from Japanese forces.

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The position of India, and especially its political position, had figured prominently at question time, but Mr. Amery gave very little encouragement to those hoping for a solution of the political deadlock. In answer to Mr. Graham White, Mr. Amery said that he could not discover in the resolutions passed by leading political parties "any satisfactory response to the Viceroy's recent appeal for unity." Major Milner asked whether the Secretary of State would not take some active steps himself, and Dr. Haden Guest drew attention to the appeal addressed to the Prime Minister by Mr. Srinivasa Sastri, Sir Tej Bahadur Sapru and Mr. Mukund Jayakar (members of H.M. Privy Council) and other Indian moderates who had created "a new centre and rallying point in Indian opinion" (an appeal backed up by the *Times*), but Mr. Amery merely replied that it would receive "every consideration." It was clearly in the minds of members that an India coöperating in the war effort would be an asset to our strength, material and moral, comparable with the U.S.A. India is now a great manufacturing area for certain munitions, but should have been by this time much more developed, and the problem of Indian government should have been resolutely tackled. The British Government's attitude to India—to which dominion status has been promised in any event—is causing grave concern in the U.S.A.

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The statement of Mr. Curtin, prime minister of Australia, which was a downright criticism of the British Government, was warmly approved in private by many members—probably a majority in the House—and was explicitly approved by several speeches in the debate. To the creation of a general war council essentially consultative as distinguished from an essentially executive empire war cabinet we shall come, and on this council India should be represented on a footing of equality with the Dominions. There should be in addition meetings of the representatives of the whole of the United Nations to discuss matters of immediate and of post-war concern.

It is clear that the Government cannot postpone much longer a fuller statement of "peace aims" than those contained in the Atlantic Charter and those that emerged from the sitting of the Allied Council at St. James's Palace, when Mr. Maisky declared the adherence of Russia to this pact. Details must be left for the future, but one matter is due for careful and public discussion now—namely, the method by which armed force will be controlled after a peace settlement. The arrangement must be one under some form of international control, and the armed forces of individual nations under their own control must be severely limited to those required for police purposes. Unless this international control is brought about—and it is one bristling with difficulties—there is no prospect of the world escaping from the threat of another great war.

QUESTION TIME

Bread

Sir ERNEST GRAHAM-LITTLE asked the Parliamentary Secretary to the Ministry of Food whether any firms, other than Roche Products, Ltd., had been approached to supply synthetic vitamin B_1, for the Government fortified loaf; and to what extent this monopoly of manufacture, continuously enjoyed by a single firm, restricted the supply of the fortified loaf which, 18 months after its general provision was promised, remained available for less than 25% of the population. —Major G. LLOYD GEORGE replied that two new factories had been acquired, equipped and financed by the Ministry for the manufacture of aneurin for fortifying white flour. Arrangements were proceeding as rapidly as present conditions permit for the production of synthetic vitamin B_1 at these two factories, but it is not expected that they will be in production for 18 months. In the meantime supplies are being received from the United States as well as from the company which is manufacturing in this country. The scheme for the fortification of white flour with vitamin B_1 will be extended to the north-west area next week and the result of this extension will be that approximately 50% of white flour consumed in the United Kingdom will be fortified.

Sir E. GRAHAM-LITTLE: What penalties are provided for breach of the instructions issued by the Ministry for the manufacture of the national wheatmeal loaf; what machinery exists for the exposure of such offences comparable with that which deals with adulteration of food; and have any prosecutions been instituted?—Major LLOYD GEORGE: The instructions for the manufacture of the national wheatmeal loaf are contained in the Bread (Control and Maximum Prices) Order 1941, S.R. & O. 1542. An infringement of this order would be an offence against the Defence General Regulations and, as such, punishable by imprisonment or fine or both. The enforcement of this and other orders made by my department is undertaken by the Ministry itself through its divisional and local organisation.—Sir E. GRAHAM-LITTLE: How many prosecutions have been instituted by the department in respect of breach of its orders or instructions regulating the composition of bread sold under the designation of national wheatmeal; and what was the date, place and result of such prosecutions?—Major LLOYD GEORGE: Up to the end of November, which is the latest date for which figures are available, there have been no such prosecutions.

Mr. W. LEACH: Is Major Lloyd George aware that bread, cakes and puddings, made of the white flour now being issued to bakers and the public, can only be kept for a very few days; and can he explain why some of the bread made with this flour has turned green when kept for a few days?—Major LLOYD GEORGE: No information of the circumstances mentioned has reached the Ministry. I shall be pleased to investigate any incident of the kind.

Rehabilitation of the Injured

Replying to Mr. HENRY STRAUSS, Mr. E. BROWN said: It is one of the first considerations of the Emergency Hospital Scheme to ensure that the injured person is as fully restored to normal function as his injury allows, before discharge from hospital. To that end the scheme includes a widespread organisation of special treatment centres for fracture and orthopædic cases, providing as part of remedial treatment the most up-to-date methods of rehabilitation—including massage and physiotherapy, exercises, games and recreations, light workshop and other handicrafts, and other forms of occupational therapy. This organisation works mainly through 21 special orthopædic centres and 56 special fracture departments, apart from special centres for other types of injury and arrangements at numerous hospitals and clinics

for short-stay cases and outpatient treatment. It has as its purpose general rehabilitation up to the point at which the patient is ready to resume his normal life or to undergo vocational training or any other special preparation for employment that may be necessary. To ensure a proper link between the latter type of training or preparation and hospital treatment, it has been arranged for a local officer of the Ministry of Labour to interview the patient while he is still in hospital and to advise, in consultation with his medical attendant, on the course best suited to his case after discharge from hospital.—Sir FRANCIS FREMANTLE: Does the rehabilitation include cases of speech therapy?—Mr. BROWN: I would like special notice of that question, but I think it does.

Vital Statistics

Replying to Sir F. FREMANTLE, Mr. BROWN said: In the years 1939 and 1940 respectively, the birth-rates per 1000 of the population were 14·9 and 14·6; the death-rates were 12·1 and 14·0. Maternal mortality was 2·82 and 2·61 per 1000 total live births; infant mortality was 50 and 56 per 1000 births. For 1940 the birth-rates and death-rates (with the exception of infant and maternal mortality) have been calculated on an estimated population which excludes non-civilians. The above information will be expanded in the summarised report on the work of my department which I hope to publish shortly. Later Mr. Brown said he hoped the report would be in the printer's hands within the next fortnight.

Tuberculosis Deaths in Mental Hospitals

In reply to a question Mr. BROWN circulated the following table in the Official Report:

Year	Deaths from tuberculosis (all forms)					
	Number of deaths			Rate per 1000 patients resident		
	Males	Females	Total	Males	Females	Total
1938	290	210	500	4·9	2·9	3·8
1939	316	225	541	5·3	3·0	4·0
1940	439	312	751	7·5	4·2	5·6

Medical Women and Ministry of Labour Staff

Miss I. WARD asked the Minister of Labour whether, in view of the wide use of woman power in the war effort, and the desirability of obtaining the coöperation of women in all spheres of departmental work, consideration would be given to the desirability of appointing a medical woman to the Ministry of Labour staff.—Mr. ERNEST BEVIN replied: The medical inspectorate of factories attached to this Ministry already includes women and further appointments of medical women to the Ministry will be made if necessary.—Miss WARD: Will the Minister consider the appointment of medical women to advise, along with the medical department, in relation to the recruitment and medical examination of women in connexion with conscription and registration?—Mr. BEVIN: The medical services that we have at our disposal—the medical boards, the Ministry of Health and other branches of medical service now available—are, I think, adequate.—Miss WARD: Is the Minister aware that the Medical Women's Federation would like a woman's representative upon the staff of the Ministry of Labour? Would he sometimes give consideration to the desires of women?

Care of Young Children

The MINISTER OF HEALTH informed Major B. A. PETO that the President of the Board of Education and he had already appointed an executive committee of officers of the two departments under the chairmanship of Sir Wilson Jameson. Consultation with the Ministries of Labour and of Supply has been maintained by regular meetings. A contact circle between officers of the Ministry and the Board and women experienced in the problems of child care was established at the outset of this work and regular meetings have been held.—Miss CAZALET: Is the Minister satisfied with the speed in this matter? Mr. BROWN: I am never satisfied.

Return of Evacuees to London

The number of school-children in the administrative county of London increased by 1330 during the week ended Dec. 6, by 1658 (Dec. 13), by 668 (Dec. 20), by 668 (Dec. 27). While the inward movement is continuing, there was a drop in the rate of return over Christmas. (Mr. BROWN replying to Captain L. F. PLUGGE.)

Broadcasts on Health

Mr. A. EDWARDS asked the Minister of Information why the British Broadcasting Corporation had refused to allow the expression of views opposed to vaccination and inoculation; and whether they had considered the right of the parents who objected to these operations to have their arguments against given the same publicity as was given to the statements in favour of them?—Mr. B. BRACKEN replied: I have consulted the governors of the BBC and I understand from them that in their broadcasts on health subjects they have felt bound to give such advice as is generally considered to be correct by the main body of medical opinion.

Upgraded First-aid Points

Replying to a question, Mr. BROWN said: The number of first-aid points which have been upgraded—i.e., provided with better accommodation and additional equipment and personnel is 518, and it is estimated that another 750 will be similarly treated as the result of the reviews which the local authorities are undertaking.

Dairy Herds

In answer to a question, Mr. R. S. HUDSON, Minister of Agriculture, said that there had been no decrease of the number of dairy cattle and calves as a result of the ploughing-up policy. Steps were being taken to show that by arable dairy-farming the dairy herds of the country would actually be increased. He was glad to say that the marketing of calves was well below that of the corresponding period of last year.

Infectious Disease in England and Wales

WEEK ENDED JAN. 3

Notifications.—The following cases of infectious disease were notified during the week: smallpox, 0; scarlet fever, 1126; whooping-cough, 1543; diphtheria, 1048; paratyphoid, 15; typhoid, 5; measles (excluding rubella), 926; pneumonia (primary or influenzal), 962; puerperal pyrexia, 186; cerebrospinal fever, 131; poliomyelitis, 7; polio-encephalitis, 2; encephalitis lethargica, 4; dysentery, 106; ophthalmia neonatorum, 76. No case of cholera, plague or typhus fever was notified during the week.

Deaths.—In 126 great towns there were no deaths from measles or scarlet fever, 1 (0) from an enteric fever, 8 (0) from whooping-cough, 43 (2) from diphtheria, 61 (8) from diarrhœa and enteritis under 2 years, and 37 (2) from influenza. The figures in parentheses are those for London itself.

Liverpool reported the fatal case of enteric fever. There were 4 deaths from diphtheria at Liverpool and 3 each at Newcastle-on-Tyne and Birmingham.

The number of stillbirths notified during the week was 211 (corresponding to a rate of 37 per thousand total births), including 19 in London.

ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.—At a meeting of the faculty held on Jan. 5, with Mr. Roy Young, the president, in the chair, Dr. I. S. McGregor (Glasgow) was admitted to the fellowship.

EDINBURGH PUBLIC MEDICAL SERVICE.—According to the rules the extension of National Health Insurance to non-manual workers whose incomes do not exceed £420 would automatically make these people eligible for this service, but at a recent members' meeting it was resolved to limit the service to those whose incomes were under £260 a year or £5 a week. The increased costs of practice have made it necessary to increase the remuneration of the doctors in the service. Rather than adopt the BMA suggestion of a 20% increase in attendance fees the members felt it would meet the case if from the beginning of April they were to cease to supply medicines to subscribers. Dr. Joseph Stark has been appointed chairman of the service; Dr. J. R. Hope, secretary; and Dr. Norman Stewart, treasurer.

Letters to the Editor

EMOTION AND BLOOD-PRESSURE

SIR,—Dr. H. O. Butler's letter (*Lancet*, Jan. 3, p. 26) tempts me to relate the best Aberdonian story I know; and unlike most of them it happens to be true.

A few years ago I had as a patient a business man from Aberdeen suffering from the effects of a cerebral hæmorrhage. Although the resulting hemiplegia was very mild, he was an excitable old gentleman with a blood-pressure round about 220/130, and I therefore insisted on total cessation of all business activities and complete rest in bed under nursing supervision. This so agitated him that for a time it looked as though the remedy would merely aggravate the disease, until he fortunately discovered that one of his insurance policies contained a sickness clause entitling him to ten guineas a week for a maximum of 52 weeks, so long as he was completely disabled. I had no hesitation in so certifying him, and after a period in bed his paresis cleared up, his blood-pressure came down to a steady 175/100, and I allowed him up for a time each day provided he kept clear of business affairs.

At this point the insurance society intervened, insisting that as he was no longer confined to bed he must not be regarded as being completely disabled and entitled to full sickness benefit, and demanding that he be seen by one of their own physicians. In due course I met the insurance society physician, gave him my full notes of the case, and left him with my patient, as I had another consultation. On my return I was informed that the insurance doctor had left an urgent letter to be given to me the moment I arrived back. It was to the effect that he had found my patient far worse than I had suggested; that his blood pressure had risen to 250/150; and that he did not think he had more than three months to live. I rushed round to find a very agitated old gentleman, greatly perturbed at the prospect of his weekly benefit being reduced; but on hearing that nothing of the sort was contemplated he quickly subsided, and in a couple of days his blood-pressure was back to 175/100.

He did not die in three months, but continued to draw his ten guineas a week until I could safely allow him to resume some of his various directorates; and it was not until three or four years later that a second hæmorrhage removed him peacefully to a realm where insurance doctors cease from troubling and emotional disturbances are at rest.

Wimpole Street, W. 1. HAROLD BALME.

SIR,—Dr. Butler is correct in his contention that emotion influences the diastolic pressure as well as the systolic. From September, 1939, to January, 1940, I was chairman of the medical board working with an officer reception unit. Several young and otherwise healthy candidates were found at the board to show raised systolic and diastolic pressures. Before rejecting these candidates I used to make them come to my rooms on a later date, when I re-examined them at ease and without the possibly disturbing presence of a number of other candidates and a series of medical examiners. In the majority of these young candidates the diastolic pressure as well as the systolic fell to normal limits. I reported this observation at a meeting of the Assurance Medical Society in 1940.

Bristol 8. J. A. NIXON.

OPERATION FOR PILES

SIR,—During a somewhat ubiquitous surgical career I have seen a number of pile operations practised, all of which in good hands seem to give uniformly good results—not least of all the old-fashioned clamp and cautery. I have, however, been most attracted to a little operation shown to me by Mr. J. H. Rawlinson at the Northern Hospital, Liverpool. The technique apparently originates from the Mayo Clinic and is really a modification of Whitehead's operation.

The preoperative treatment is that used at St. Mark's Hospital, but the pubis is not shaved. Spinal stovaine, 0·3 c.cm., is given, and with the patient in the lithotomy position the anal sphincter is slowly and gently stretched. An incision starting in front and to one side of the midline follows the pectinate line to a similar point on the same side behind. A semicircular cuff of pile-bearing mucous membrane is then dissected up. No encroachment must be made on anal skin. The side with the largest piles is started first and each half completed separately. The operation is greatly facilitated by the use of Lahé's tiny swabs gripped in the beak of a hæmostat, at the same time a right degree of tension being maintained by mosquito-forceps on the edge of the fragile membrane. Once the right plane has been entered this dissection proceeds easily. The external hæmorrhoids, if present, are dissected out from the skin flap. A small, round-bodied, fully-curved needle, charged with no. 1 catgut, now begins a running suture which is first tied at the anterior end of the incision; by a process of cutting a little and sewing a little the pile-bearing area is removed and the mucous membrane is approximated to the anal skin. The stitches through the skin edge should be spaced more widely than those in the mucous membrane, so that an even apposition of the edges is achieved. If the needle is made to pass in and out of the inner surface of the membrane, at its edge, a slight shelving effect is obtained, with advantage. A small quantity of soft paraffin is inserted into the rectum, but no tube. Postoperative treatment is by hot boracic compresses. A warm olive-oil enema is given on the third day, preceded by liquid paraffin, ½ oz., on the previous evening; a similar dose of paraffin is given twice daily for the remainder of the convalescence. A hot sitz bath is taken twice daily from the third day, and the patient is out of hospital on the seventh day.

The operation has several advantages. Secondary and external piles can be dealt with comprehensively. Postoperative pain is minimal, often absent; this contrasts strongly with the excruciating pain, requiring much morphia, which often follows the ligation type of operation. The incidence of postoperative retention of urine in the male shows a similar reduction. On digital examination, the anal canal seems to return to normal more rapidly than after other pile operations. The average period of hospitalisation is reduced, and the results compare favourably with those of other methods.

Romford, Essex. D. LANG STEVENSON.

POSTURE DURING SLEEP

SIR,—May your correspondents upon this subject, so far as it affects the healthy person, be referred to the careful work of Johnson, Swan and Weigand (*J. Amer. med. Ass.* 1930, **94**, 2058) who, using mechanical and photographic methods upon an adequate number of cases, upset the notion that healthy sleep is taken in a few positions each held for a long time, and found that, to quote a typical example, changes in gross bodily position, many being mirror images of others, occurred between 20 and 45 times during a night of 8 hours?

Cambridge. F. B. PARSONS.

PERCY FLEMMING

SIR,—The death of Percy Flemming removes from the familiar U.C.H. figures one who never failed to champion the cause of the women students. Perhaps they were among the "lame dogs" mentioned in J. H. P.'s obituary notice of Jan. 3. But Flemming never acted from sentimental motives. Through his wife, who was senior physician at the Elizabeth Garrett Anderson Hospital, he came to know very fully the possibilities of a professional life which never left out of account the claims of family life, so that he would not listen to those who tried to make out that no woman could succeed professionally unless she were divided against herself and had forfeited her legitimate spheres of interest. He was a tower of strength to those women who found themselves somewhat precariously and unpopularly installed at U.C.H. in the difficult years immediately after the last war. He was a stickler for professional etiquette, and realised how little chance the women had then of knowing the traditions of a great teaching hospital. His professional advice to them was shrewd and was given unstintingly. He enjoyed teaching, and had a way of imparting his facts which made the student feel capable of reproducing them. He never gave brilliant demonstrations, but his diffident and halting way of putting his questions, and his insistence on the prick of intellectual curiosity being used to spur on further inquiry, would succeed in giving to students, who might have no particular interest in his specialty, a wide and sound foundation of knowledge. Observation, clinical judgment, and an unusually fine sense of the personality of his patient would always come

first, and theory only in sufficient amount to remind the student of the rules. To make a success of Percy Flemming's clinic, it was not necessary to know a lot, but one had to notice everything and think hard, and the knowledge seemed to fit into place with that.

Nowhere was his gift of making a subject interesting seen to better advantage than in his long talks on hobbies. He was no athlete but a great walker, and on foot he explored a good deal of this country, reconstructing as he did so the rich life of monastic England, or of the Romans. His speculations were never undirected or romantic, but were related always to his bold and critical scrutiny of all his observations. A walk beside the Thames, near his home, would lead to a discussion of the formation of the chalky Chilterns, and an afternoon with the grandchildren would mean a series of shrewd questions as to how children learn to notice shapes, and why some children are apparently word-blind.

E. M. C.

ANÆSTHETIC FLOWMETERS

SIR,—I feel it necessary to dissociate the Rotameter Company from Dr. Magill's statement: "the fact remains recorded in the correspondence files of the Rotameter Company that Mr. King first suggested the manufacture of rotameters for anæsthetic purposes in 1932." We have on file one letter from Mr. King in 1932 which states: "Please let us have particulars of 'Rotameters' for gas and oxygen, and oblige." We have no record of any further communication from Mr. King until June 1937, when we discussed with him the adaptation of rotameters to modern anæsthetic requirements. I may add that early in 1937 we received a visit from Mr. Richard Salt, technician to the Nuffield Department of Anæsthetics, and I accept the statement (*Lancet*, Dec. 6, 1941, p. 718) that the adaptation of rotameters in a form suitable for anæsthetic apparatus was suggested by Mr. Salt.

A. H. TROST,
Director,
Rotameter Manufacturing Co. Ltd.

Portslade, Sussex.

NEUROSIS SIMULATING ORGANIC DISORDER

SIR,—The paper by Dr. Cook and Dr. Sargant is surely something of a landmark in medicine. For about forty years isolated voices have been crying in the wilderness of the medical journals (one of them, for example, in the *Lancet* of Feb. 24, 1940) that if the old formula "exclude organic disease before diagnosing neurosis" were amended to read: "exclude neurosis (if you can) before diagnosing organic disease," it would go some way towards preventing the commonest error in medicine. Is it not permissible for us to see in this paper, and in its publication in your columns, the first faint signs of the general acceptance of this obvious and elementary truth? If so, we may indeed regard it as a herald of the dawn.

The writers might do still further service if they would—or could—explain what they mean by "neuropsychiatric opinion." Is "neuropsychiatry" a specialty which can be practised by one individual, or are two required? If the latter, what are they called? If the former, does the "neuropsychiatrist" claim expert knowledge of the two great branches of medicine indicated in his horrible name? Much should, indeed, be required of him if he does. I rather suspect that I met one or two of him at an earlier stage of the war. Truth compels me to state, however, that in spite of his claims, or possibly because of them, he, like the House of Peers throughout another war, "did nothing in particular, and did it very well."

HENRY YELLOWLEES,
Late Consulting Psychiatrist
to the B.E.F. in France.

Harley Street, W.1.

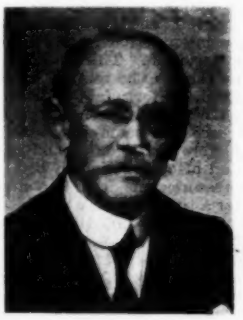
MEDICO-LEGAL SOCIETY.—An ordinary meeting of this society will be held at 26, Portland Place, London, W.1, on Thursday, Jan. 22, at 4.30 P.M., when Mr. Julius Grant, F.I.C., will speak on paper as evidence.

BRITISH INSTITUTE OF PHILOSOPHY.—On Friday, Jan. 23, at 3 P.M., at 14, Gordon Square, London, W.C.1, Prof. A. D. Ritchie will deliver a lecturer to the institute. He will speak on the social relations of science.

Obituary

ALFRED LEONARD FULLER
F.R.C.S.I.

Mr. A. Leonard Fuller died on Christmas eve at the age of 71 in Bath which had been the pleasant setting of almost his whole life. He was born and bred in the town, and soon after qualifying from St. Thomas's Hospital in 1895 he returned to settle there for good as partner to the late Dr. Tregenna Goss, whose elder daughter, Ethel Margaret, he married in 1897. His association with the Royal United Hospital was long and fruitful—he was appointed anæsthetist as early as 1901—and with it grew his reputation as a surgeon. He was appointed assistant surgeon in 1904, took his Irish fellowship four years later, and when he retired from the staff in 1930 he had been senior surgeon for five years. He was also surgeon to the Royal Mineral Water Hospital. Fuller served for many years on the committee of management of the Royal United; he took a great interest in the founding of its paying block, and when it was opened in 1924 under the name of the Forbes Fraser Hospital he performed the first operation there.



In 1940 when the Bath Book Society celebrated its centenary Mr. Fuller sent us an account of its work, and last year on Dec. 12 when it met once more, as usual at his home, he was again elected to the secretaryship, an office which he had worthily held for 37 years. He was also a past president of the Bath Clinical Society. A prominent freemason, since 1939 he had been provincial grand mark master for Somerset. When the B.M.A. met at Bath in 1925, as citizen and surgeon Mr. Fuller was the obvious choice as secretary of the surgical section. He was also one of the editors of the "Book of Bath," which was published to commemorate the meeting, and some of its attractive illustrations were reproduced from prints and pictures in his collection. In his leisure Mr. Fuller was an enthusiastic gardener. He was generous with his knowledge and skill, and the gardens at the Royal United owe much to his interest and counsel. His wife died in 1927, and he leaves a daughter and two sons, one of whom is Mr. Herbert Fuller, F.R.C.S.E.

G. E. CARTWRIGHT WOOD
M.D., B.SC. EDIN., M.R.C.S.

Dr. George Edward Cartwright Wood, who died on Christmas Day at Bexhill-on-Sea, was for 20 years director of the laboratories of the Metropolitan Asylums Board at Sutton, retiring owing to ill health in 1925. He graduated in medicine at Edinburgh in 1885, and then finding his interests were physical and physiological rather than clinical went on to take the B.Sc. in public health. For the next few years he worked on enzymes at Edinburgh, on saprophytes at Berlin with Hueppe, and on anthrax at the Pasteur Institute in Paris. When the Metropolitan Asylums Board started special laboratories and stables for the bacteriological examination of specimens and the production of antitoxic sera for its fever hospitals, he became Sims Woodhead's assistant, and when Woodhead left in 1905 to take the chair of pathology at Cambridge, Wood succeeded him as director. His great bacteriological knowledge and his special experience of bacterial filtration, on which he wrote an important treatise, fitted him specially for this work. In 1908 excellent new laboratories and stables were erected at Sutton, mainly according to his plans and specifications. One of his assistants, who later became professor of hygiene at Breslau, gratefully recalls the years he spent with Cartwright Wood. Wood was, he writes, a master of technique, a good teacher, the kindest and most generous chief, and above all considerate of the welfare of every member of the staff. After his retirement he used to spend half the year in his London rooms amid his books, the other half with his sister in his beloved Florence.

FELLOWSHIP FOR SIR EARLE PAGE

THE admission of Sir Earle Page, special representative of the Australian Government, to the honorary fellowship of the Royal College of Surgeons of England took place on Jan. 8 in room 1 of the college museum, the first occasion on which this room has been used since its rearrangement as a lecture and assembly room. In his address Sir Alfred Webb-Johnson, the president, said that the council had decided to confer the honorary fellowship partly because of Sir Earle Page's services to surgery and partly because of the honour he has brought to our profession by his distinguished services as a statesman.

"From the time of Aristotle to the present day," he said, "the hazardous path of politics has attracted many members of the medical profession. Several of them have achieved distinction, as one might expect from their training; for, as sound treatment can only be planned after correct diagnosis, so can sound policy only be formulated in the light of a knowledge of facts. In the history of the British Empire we may be proud of the record of many members of our profession who have followed a political career. William Petty founded the science of political economy. Walter Foster, Christopher Addison (a fellow of our college), Auckland Geddes and Walter Elliot have held high ministerial office at home; Charles Tupper was prime minister of Canada and Starr Jameson of South Africa, while Godfrey Huggins (another fellow of our college) is prime minister of Southern Rhodesia. In other countries the record is not quite so good. In France, for example, that sturdy patriot Clemenceau, who today again might have 'fired the soul of France and steeled her will,' was a medical man, but so was Marat and so was the advocate of the humane killer, Dr. Guillotin. You have left active practice for some years but your colleagues have not forgotten your services to surgery and have watched your political career with interest and pride. We recall that in the last war you gave splendid service in a busy casualty clearing station on the Western Front. In this war you are one of a team charged with the extirpation of the most dreadful scourge that has ever beset mankind, and for that scourge will be needed the most radical excisional operation ever performed. For such a task it is but fitting that you should be armed with what is regarded as the highest surgical diploma obtainable."

Sir Earle Page said he deeply appreciated the honour conferred on him. Though he had had a varied life, at heart he was only a truant surgeon, and the most interesting and happy period of his life was on the French front in the casualty clearing station, with constant opportunities of meeting and working in full collaboration with the British and Empire surgeons. "Surgical training is most valuable for political life. The most needed and least common thing in politics is diagnosis before treatment. Too often political treatment is empirical. A huge poultice is clapped on the cancer to hide it from the public, instead of doing a complete excision. The next most important thing needed in politics which our life and training teaches is quick decision and immediate action on the decision. With this combination of early diagnosis, quick decision and immediate action, half the political and international troubles would never arise. ... My job during the last three months has been peculiarly associated with my professional training. It was first to impress on the British Government the anatomical point that the Empire has a heart and body as well as a head, and that the whole organism would be just as dead if shot through the heart as through the head. Four-fifths of the Empire possessions are in the Indian and Pacific Oceans, six-sevenths of its population and two-thirds of its resources; and Australia is an integral and most important part of the body whose views it has been my duty to put forward. My second job has been a vivisectional research on the Empire system of government while it is actually functioning on its various planes, to see where it fails and how it can be improved. In this, I have followed true Hunterian principles and I find that the critical point of precipitation of policy was not always high realms but usually three or four men down the scale. My surgical research on this political problem of Empire coördination of policy which must be solved before we can have a satisfactory Allied coördination of policy may perhaps entitle me to the distinguished honor you confer on me today. But whether so or no, I thank you for what I shall always prize, not only for its intrinsic merit, but as a mark of your esteem and appreciation of my life work."

EMBRYO AS PATIENT

THE proper study of mankind is man, but for our knowledge of very early man we are largely dependent on study of the lower animals. Diseases of the human embryo cannot be treated surgically and though the embryo can be affected by drugs controlled treatment is impossible. Some of these aspects of intra-uterine life were discussed by Prof. A. St. George Huggett at a meeting of the Pharmaceutical Society in London on Jan. 8. Claude Bernard first demonstrated that the placenta has storage functions analogous to the liver and it is now known to exercise other important functions in the transmission of foodstuffs, waste products and gases between maternal and fœtal tissues. Endocrines of the sterone type and from the pituitary appear to be stored there; they may, however, be secretions or possibly katabolites of placental tissue. During the last third of pregnancy the six layers of tissue which separate fœtal and maternal circulation atrophy to one, two or three layers, but the persisting tissue always includes the fœtal vascular endothelium so that the blood circulates in sacs suspended in the maternal blood and conditions are thus suitable for diffusion and also for the diapedesis of organisms. Before this critical age the placental storage of glycogen and fat was maximal; later carbohydrate, fat and iron appear in the fœtus but little is known of the mechanism by which they cross the placenta. After the critical age the placental stores decrease and simple diffusion occurs, together with the passage of unaltered colloids and organisms. Inorganic salts traverse the placenta by diffusion in all animals; strychnine and most diffusible alkaloids likewise cross with ease and can kill the fœtus. The problem is largely one of molecular size versus placental thickness. The cow, sheep and goat lose one maternal layer and allow potassium iodide to cross but stop thyroxin, œstrone and antitoxins. The dog and cat lose a further maternal layer and permit the passage of the endocrines but stop all antitoxins and proteins. The rodent and man lose still one more maternal layer and allow most antitoxins and colloids to pass but stop the toxins of diphtheria and tetanus as well as the big molecules of globulins. Organisms have never been recovered from the human fœtus before degenerative changes have occurred in the placenta. Virus and other infections causing skin rashes occurring in pregnant women during the last part of pregnancy result in fœtal rashes. The fœtus seems to have no power of forming antitoxin on its own, this being entirely a postnatal development. Complaints found in the fœtus include cholera, pneumonia, bubonic plague, erysipelas, anthrax, tuberculosis, scarlet fever, measles and variola. The fœtus has been infected with smallpox while the mother was unharmed. In common with adults the fœtus is unable to synthesise the benzene ring and is therefore entirely dependent on the mother for amino-acids and vitamins. The permeability of the placenta to drugs is fairly high in the human; a bromine rash has been observed. Narcotics can percolate the placenta, as in twilight sleep; water-soluble narcotics pass more readily than the fat-soluble, water-insoluble anæsthetics, like chloroform, though a large dose will take effect. Concomitant with the altered permeability there is a pronounced increase in the fœtal weight and deposition of mineral substances. The chief factors which affect weight include heredity, maternal nutrition and mineral supply, the endocrines, competition in multiple pregnancies, and maternal disease. At present the maternal food-supply is the only one of these which can be controlled. If the maternal diet is sufficiently low the fœtus suffers from malnutrition and the most fruitful months of growth are wasted. Malnourished infants can be brought to a normal weight only by intensive supplementary feeding over a period of at least four to five years. The remedy is to provide the mother with a diet adequate both in quantity and quality.

Medical News

Royal College of Surgeons of England

A meeting of the council of the college was held on Jan. 8, with Sir Alfred Webb-Johnson, the president, in the chair. Mr. Victor Bonney was appointed Hunterian orator for 1943, Mr. L. R. Braithwaite Bradshaw lecturer for 1942, and Sir Hugh Lett Thomas Vicary lecturer for 1942. The Hallett prize was awarded to P. G. Somerville (Camb. and St. George's).

The council received with thanks a gift of £2000 from the American College of Surgeons for assistance in restoration necessitated by enemy action.

A Diploma of membership was granted to Ronald Fothergill (Birm.) and also to Charles William Graham, hon. surgeon to the Carlisle Dispensary. Mr. Graham passed the primary examination for the membership in 1885 and therefore ranks as a pre-conjoint board student.

The following diplomas were granted, jointly with the Royal College of Physicians:—

D.P.M.—D. T. Aitken, Gerald Caplan, J. H. Colhoun, Margaret J. Moore, L. H. Rubinstein, B. B. Sharp, Barbara J. Shorting, G. M. Tucker, A. J. Warren and Duncan Whittaker.

D.L.O.—T. M. Banham, Leon Gillis and J. S. C. Monro.

Epsom College

The council of the college will shortly proceed to award St. Anne's scholarships to girls attending Church of England schools. Candidates must be fully 9 and under 16 years of age, and must be orphan daughters of medical men who have been in independent practice in England or Wales for not less than 5 years. The value of each scholarship is dependent upon the means of the applicant and the locality and fees of the school selected.

The conjoint committee of the college will in May award a Christie pension of £89 a year to a necessitous medical man, fully 55 years of age, who has been registered for 5 years, and who is in need of help.

Forms of application for the scholarships and the pension can be had from the secretary's office, Epsom College, Surrey, and must be sent in by April 24.

Royal Society of Medicine

A general meeting of the fellows of this society will be held on Tuesday, Jan. 20, at 3.30 P.M. The sections of pathology and of psychiatry will meet at 2.30 P.M. on the same day. At the section of pathology Dr. G. M. Findlay will speak on virus D, and Dr. Dorothy Russell will report on a case of gargoylism. At the section of psychiatry Major M. J. F. McArdle and Dr. W. L. Neustätter will discuss neurosis after head injury. On Jan. 22, at 2.30 P.M., Mr. G. E. Nelligan will give his presidential address on some comparatively uncommon diseases to the section of urology. On Jan. 23, the section of disease in children will meet at 2.30 P.M., when Mr. D. W. C. Northfield and Dr. W. G. Wylie will open a discussion on intracranial injuries in childhood. On the same day and at the same time Lieut.-Colonel D. Gordon Cheyne will read a paper to the section of epidemiology and state medicine on the medical aspects of man-power in a world army today.

Medical Awards

The *D.S.C.* has been awarded to Surgeon Lieut.-Commander E. M. Tymms, M.D. Melb., R.A.N.R., H.M.A.S. *Perth*, Surgeon Lieutenant R. I. Bence, B.M. Oxfd, R.N.V.R., Surgeon Lieutenant E. B. McDowall, M.B. Camb., R.N.V.R. and Surgeon Lieutenant C. F. Harrington, R.A.N.R., for outstanding gallantry, fortitude and resolution during the Battle of Crete.

The *M.B.E.* has been awarded to Dr. Jack Seidenberg, medical officer at a first-aid post in Stepney.

During an air-raid the post was damaged, but, despite the difficult conditions, Dr. Seidenberg continued to treat casualties. While loading an ambulance with the more serious cases a bomb fell nearby, and the doctor was buried by debris. He extricated himself and, although almost blinded and in great pain, he went to the aid of an injured fireman. He then continued to help other victims until he collapsed. Dr. Seidenberg showed great courage and devotion to duty.

The fact that goods made of raw materials in short supply owing to war conditions are advertised in this paper should not be taken as an indication that they are necessarily available for export.

Dr. JAMES FENTON, medical officer of health for the Royal Borough of Kensington and a former president of the Society of Medical Officers of Health, has been elected president of the Medical Defence Union.

Hospital Committee for Scotland

The Secretary of State for Scotland has appointed a committee to report to him on the application to Scotland of the Government's post-war hospital policy which was announced in Parliament on Oct. 9 (see *Lancet*, 1941, ii, 466). The chairman of the committee is Sir Hector Hetherington, principal of Glasgow University, and the other members are: Mr. D. A. Anderson; Mr. James Cook, J.P.; Mr. J. M. Erskine, D.L., J.P.; Sir John Fraser, F.R.C.S.E.; Mr. Neil Gunn; Mr. Charles Murdoch; Mr. David Robertson, LL.B.; Miss Beatrice Rose; Mrs. C. McNab Shaw; and Mr. J. M. Vallance, W.S.

The committee's remit is: "To consider and make recommendations within a policy aimed at the post-war development of a comprehensive and coördinated hospital service in Scotland on a regional basis as to the future administration of new hospitals built by the Government and now administered by them as part of the Emergency Hospital Service; the arrangements most likely to secure the maximum coöperation between voluntary hospitals, local authority hospitals and the new hospitals referred; and the financial arrangements between voluntary hospitals and local authorities and between voluntary hospitals and patients and contributors best fitted to enable those hospitals to coöperate in the coördinated hospital service."

Mr. G. Price-Jones and Mr. R. P. Fraser, both of the Department of Health for Scotland, will act as secretary and assistant secretary, and communications for the committee should be addressed to the secretary at St. Andrew's House, Edinburgh, 1.

London Jewish Hospital Medical Society

Miss Muriel Landau will deliver her presidential address to this society on Thursday, Jan. 29, at B.M.A. House, Tavistock Square, W.C.1, at 3 P.M. She will speak on the history of gynæcology with some points of special Jewish interest.

Appointments

ALLAN, K. B., M.B. DURH.: an examining factory surgeon for the Daimler Company.

KING, C. A., M.R.C.S.: senior R.S.O. at the Royal Gwent Hospital, Newport, Mon.

MAUTNER, FRANCIS, M.D. PRAGUE: asst. M.O.H. and asst. school M.O. for Dudley.

MCLINTOCK, J. M., L.R.C.P.E.: examining factory surgeon for Larbett, Stirlingshire.

URICH, L. G. W., M.R.C.S., D.T.M. & H., D.P.H.: M.O.H. (Grade A) for Trinidad.

Births, Marriages and Deaths

BIRTHS

BAILEY.—On Jan. 9, at Ealing, the wife of Dr. Robert Bailey—a son.

CRITCHLEY.—On Jan. 9, at East Molesey, Surrey, to Dr. Dorothy (*née* Pope) and Major Cyril Critchley, R.A.M.C.—a son.

EDWARDS.—On Jan. 3, at Swansea, the wife of Surgeon Lieutenant C. H. Edwards, R.N.V.R.—a daughter.

JOHNS.—On Dec. 26, at King's College Hospital, London, the wife of Dr. T. A. M. Johns—a son.

MACHRAY.—On Jan. 9, in London, the wife of Dr. Robert Machray—a daughter.

MARSHALL.—On Jan. 5, at Tonbridge, the wife of Dr. John Marshall of Hadlow, Kent—a son.

PASMORE.—On Jan. 8, in London, to Dr. Jean and Dr. Stephen Pasmore—a daughter.

WARD.—On Jan. 6, at Ellon, Aberdeenshire, the wife of Surgeon Lieutenant F. G. WARD, R.N.V.R.—a son.

WATSON.—On Jan. 8, at Glasgow, the wife of Captain G. I. Watson, R.A.M.C.—a daughter.

MARRIAGES

MARTIN—STEWART.—On Dec. 20, in London, Kenneth Whittle Martin, M.B., surgeon lieutenant R.N.V.R., to Daphne Esplin Stewart.

MILES—CLAYTON GREENE.—On Jan. 8, in London, Roger Miles, M.B., to Doris Clayton Greene.

PETERKIN—EDWARDS.—On Jan. 6, at Warminster, Douglas Brock Peterkin, M.B. Edin., captain R.A.M.C., of Inverness, to Truda Edwards.

DEATHS

ADDISON.—On Jan. 8, at Bradfield Hall, Bury St. Edmunds, Oswald Lacy Addison, M.B. Lond., F.R.C.S.

MARTIN.—On Nov. 3, John Martin, M.R.C.S., surgeon captain, R.N. retd. (Corrected notice.)

STEELL.—On Jan. 10, in London, Graham Steell, M.D. Edin., F.R.C.P., aged 90.

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during the week commencing MONDAY, 2ND FEBRUARY, 1942
10 A.M. to 12 NOON.—Clinical Lectures and Demonstrations.
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1 P.M. to 2 P.M.—Clinical Lectures and Demonstrations.
2 P.M. to 4 P.M.—Practical Classes.
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MONDAY, 2ND FEBRUARY .. General Principles of Fracture Treatment.
TUESDAY, 3RD FEBRUARY .. Injuries of the Upper Limb.
WEDNESDAY, 4TH FEBRUARY .. Injuries of the Lower Limb.
THURSDAY, 5TH FEBRUARY .. Injuries of the Spine, Pelvis, and Hip Joint.
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The Course will be limited to a maximum of 40 students, and applications for admission should be submitted to the DEAN, British Postgraduate Medical School, Ducane-road, W.12. The Course will only be held if a minimum of 18 students apply.

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Fee 16 guineas (10 guineas to members of these colleges).

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BY THE
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ROYAL COLLEGE OF SURGEONS OF ENGLAND.

Notice is hereby given that the following Examinations will commence on the dates stated below:—

DIPLOMA IN TROPICAL MEDICINE AND HYGIENE, THURSDAY, 19TH FEBRUARY.

DIPLOMA IN OPHTHALMIC MEDICINE AND SURGERY, MONDAY, 16TH FEBRUARY.

Candidates who have fulfilled the necessary conditions and who desire to present themselves for Examination must give notice in writing to the Secretary, Examination Hall, 8–11, Queen-square, London, W.C.1, at least twenty-one days before the date of the Examination, transmitting at the same time such certificates as may be required by the Regulations of the Board. HORACE H. REW, Secretary.

Royal College of Surgeons of England.
LICENCE IN DENTAL SURGERY.

Notice is hereby given that the FINAL PROFESSIONAL EXAMINATION will commence on MONDAY, 16TH FEBRUARY. Candidates are required to give at least twenty-one days' notice of their intention to present themselves for the examination to the DIRECTOR OF EXAMINATIONS (Mr. Horace H. Rew), Examination Hall, 8–11, Queen-square, London, W.C.1, from whom all particulars relating thereto may be obtained.

L. M. S. S. A.
FINAL EXAMINATION: SURGERY, February 9th, March 9th, April 13th, 1942; MEDICINE, February 16th, March 16th, April 20th, 1942; MIDWIFERY, February 17th, March 17th, April 21st, 1942.

For regulations apply REGISTRAR, Apothecaries' Hall, Black Friars-lane, London, E.C.4.

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For the reception and treatment of PRIVATE PATIENTS of both sexes of the UPPER AND MIDDLE CLASSES suffering from Mental and Nervous Disorders, Alcoholism and Drug Addiction, either voluntarily, temporarily, or under certificate. Patients are classified in separate buildings according to their mental condition. Situated in park and grounds of 400 acres. Self-supported by its own farm and gardens in which patients are encouraged to occupy themselves. Every facility for indoor and outdoor recreation. For terms, prospectus, etc., apply MEDICAL SUPERINTENDENT. *Telephone:* Ashton-in-Makerfield 7311. *Telegraphic Address:* Wootton, Ashton-in-Makerfield.

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new address: ASH HALL, BUCKNALL, near STOKE-on-TRENT, STAFFS *Telephone:* ASH BANK 215
Temporarily removed from Swaylands, Penshurst, Kent, to above country house about five miles from Stoke in the direction of Ashbourne.
The Hospital will continue to admit for treatment patients of moderate means suffering from psychoneurotic illnesses.
Patients suffering from psychotic illnesses are not eligible for admission.
Further particulars may be obtained by application to the Medical Director at the new address.

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The following appointment as Examining Surgeon under the Factories Act, 1937, is vacant.

Applications should be sent to the CHIEF INSPECTOR OF FACTORIES, 28, Broadway, London, S.W.1.

District	*County*	*Latest date for receipt of application*
WIMBORNE ..	DORSET ..	27th January, 1942

Royal Free Hospital,

Gray's Inn-road, W.C.1.

Applications are invited from registered medical practitioners for the whole-time appointment of OBSTETRIC AND GYNÆCOLOGICAL REGISTRAR (B1). Applicants must not be more than ten years qualified. Suitably qualified R practitioners holding B2 or B1 appointments are invited to apply. Salary £350 per annum.

Applications, stating age, and accompanied by copies of three recent testimonials, should be sent to the undersigned (from whom all information may be obtained) on or before the 7th February, 1942. RICHARD T. BARTLEY, Secretary.

Royal Free Hospital,

Gray's Inn-road, W.C.1.

Suitably qualified R practitioners holding B2 or B1 appointments are invited to apply for the appointment of RESIDENT MEDICAL OFFICER (B1) at THREE COUNTIES HOSPITAL, Arlesey, Bedfordshire. Applicants must not have been qualified for more than ten years.

Applications, stating age, and accompanied by copies of three recent testimonials, should be sent to the undersigned (from whom all information may be obtained) on or before 20th January. The successful applicant will be required to take up the post at once. The salary, which is paid by the E.M.S., is £350 per annum. The appointment will be for six months in the first place. RICHARD T. BARTLEY, Secretary.

King Edward Memorial Hospital,

Mattock-lane, Ealing, W.13.

Applications are invited from registered medical practitioners, Male or Female, for the appointment of CASUALTY OFFICER AND DEPUTY RESIDENT MEDICAL OFFICER (B2), vacant 1st February, 1942, including R practitioners who now hold A posts. Six months' appointment. Salary at the rate of £225 per annum, with full residential emoluments.

Applications, stating age, qualifications with dates, nationality, and present post, and accompanied by copies of two recent testimonials, should be sent to the undersigned immediately.

R. A. MICKELWRIGHT, House Governor.

King Edward Memorial Hospital,

Mattock-lane, Ealing, W.13.

Applications are invited from registered medical practitioners for the appointment of RESIDENT MEDICAL OFFICER (B1), vacant 1st February, 1942. Applicants should have held previous house appointments and had surgical experience. Preference will be given to candidates holding diploma of F.R.C.S. Suitably qualified R practitioners holding B2 or B1 appointments are invited to apply. Salary at the rate of £275 per annum, with full residential emoluments.

Applications, stating age, nationality, qualifications with dates, experience, and details of previous appointments, and accompanied by copies of two recent testimonials, should be sent to the undersigned immediately.

R. A. MICKELWRIGHT, House Governor.

The Salvation Army,

THE MOTHERS' HOSPITAL,
Lower Clapton-road, Clapton, E.5.

Applications are invited from medical Women for the post of JUNIOR RESIDENT MEDICAL OFFICER (A), vacant 1st March, 1942. Salary £80 per annum, with board, residence, and laundry. The appointment is for six months.

Applications, with testimonials, to be sent to the Superintendent not later than 27th January, 1942.

FRED HAMMOND, Superintendent.

London Chest Hospital,

Victoria Park, E.2.

Vacancy for HOUSE PHYSICIAN (B2) will occur on 1st March, 1942. R practitioners now holding A posts may apply. Six months' appointment. Salary at the rate of £150 per annum, board, residence, and laundry provided.

Applications, with copies of three testimonials, should be sent before 27th January to the SECRETARY.

Guy's Hospital, S.E.1.

Applications are invited for the post of OPHTHALMIC ASSISTANT to the Hospital. The appointment is for one year in the first instance. The honorarium is at the rate of two guineas per session; attendance at one weekly session, at present held on Thursday afternoons, is required. Duties to commence immediately.

Applications should be sent to the TREASURER, the Superintendent's Office, Guy's Hospital, S.E.1, not later than Saturday, 24th January.

Charing Cross Hospital.

RESIDENT ANÆSTHETIST.

Applications are invited from registered medical practitioners (Male) for the above B2 appointment. R practitioners holding A posts may apply when appointment will be limited to six months. Salary £200 per annum.

Applications, together with copies of three testimonials, should be sent, to arrive not later than first post 30th January, 1942, to: GEORGE J. JONES, Secretary.

Charing Cross Hospital.

JUNIOR SURGICAL REGISTRAR (RESIDENT).

Applications are invited from registered medical practitioners (Male) for the above B1 appointment. Suitably qualified R practitioners holding B2 or B1 posts may apply. Salary (minimum) commencing £350 per annum.

Applications, together with copies of three testimonials, should be sent, to arrive not later than first post 30th January, 1942, to: GEORGE J. JONES, Secretary.

St. Thomas's Hospital, S.E.1.

Applications are invited for the post of ASSISTANT RADIOTHERAPIST. Tenure of appointment six months, eligible for re-election. Commencing salary £500 per annum. Applicants must hold a Diploma in Medical Radiology.

Applications, stating age, nationality, qualifications with dates, and details of previous appointments, should be sent to the SECRETARY of St. Thomas's Hospital, London, S.E.1, not later than the 2nd February, 1942.

Resident Obstetric House Surgeon

(B2) required by MIDDLESEX COUNTY COUNCIL for NORTH MIDDLESEX COUNTY HOSPITAL, Edmonton, N.18. Applicants must be registered medical practitioners (including R practitioners now holding A posts) who have held resident appointments in general hospitals. Salary £120 per annum. Board, lodging, and laundry. Appointment is for six months, subject to medical examination and one month's notice. Whole-time duties such as Council may require, under direction of Medical Superintendent. The Hospital has a large obstetric and gynæcological department, and is approved for R.C.O.G. purposes. Post vacant mid-January.

Applications, stating age, nationality, qualifications with dates, and experience, to the undersigned. Application forms not provided. Relationship to any member or officer of the Council to be disclosed. Copies of not more than three recent testimonials. Canvassing, directly or indirectly, will disqualify. Closing date 21st January, 1942.

C. W. RADCLIFFE, "B3," Clerk of the County Council.
Middlesex Guildhall, Westminster, S.W.1.

Royal National Orthopædic Hospital,

BROCKLEY HILL, STANMORE, MIDDLESEX.

Applications are invited from registered medical practitioners (including R practitioners holding A posts) for the appointment of RESIDENT HOUSE SURGEON (B2). There are two vacancies, one on 1st February and one on 1st March. The appointments are for six months. Salary £200 per annum, with board, quarters, laundry, &c.

Applications, stating age, nationality, qualifications, and previous experience, with copies of testimonials, to be sent to the SECRETARY, Royal National Orthopædic Hospital, 234, Great Portland-street, W.1, not later than Wednesday, 21st January.

Tilbury Hospital, Tilbury, Essex.

(SEAMEN'S HOSPITAL SOCIETY.) (116 Beds.)

Applications are invited from British Male registered practitioners for the appointment of HOUSE OFFICER (A), falling vacant on 1st February, 1942, including R practitioners within three months of qualification when appointment will be for six months. Salary at the rate of £120 per annum, with full residential emoluments.

Applications, stating age, qualifications with dates, and testimonials, to be sent to the undersigned.

F. A. LYON, Secretary.
Seamen's Hospital Society, Greenwich, S.E.10.
1st January, 1942.

HIS MAJESTY'S COLONIAL SERVICE

THE COLONIAL MEDICAL SERVICE

VACANCIES FOR MEDICAL OFFICERS

The maintenance of an efficient Colonial Medical Service constitutes a vital part of the national war effort and it is most important that the Service should be assured of an adequate supply of doctors.

The Secretary of State for the Colonies therefore invites applications from doctors possessing a medical qualification registrable in the United Kingdom who are British subjects and who are under thirty-five years of age.

Medical Officers are appointed in the first instance for general service. But there are ample opportunities for work in special branches of medicine and surgery, in public health and in medical research.

The normal salary scale is from £600 to between £1,000 and £1,120. There are large numbers of super-scale posts to which promotion is made on merit and which carry higher salaries.

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Selected candidates are normally required to attend a course of instruction in Tropical Medicine and Hygiene either before proceeding overseas or during their first period of leave.

Further particulars, including the regulations governing admission to the Colonial Medical Service, may be obtained from the Director of Recruitment (Colonial Service), 2, Park-street, London, W.1.

Middlesex County Council.

Additional PSYCHIATRIST (Temporary and unestablished) required in Public Health Department to assist the Psychiatrist to the Education Committee. Registered medical practitioner with special experience in psychiatry. Whole-time duties under County Medical Officer include medical and psychological examination of boys and girls in Remand Homes, and such other medical work as directed. Salary £600 to £750 per annum, according to experience, with out-of-pocket travelling expenses; one month's notice on either side.

Applications (forms not provided), stating age, qualifications, and experience, with copies of up to three recent testimonials, to the undersigned by 24th January. State relationship to any member or officer of the Council. Endorse envelope "Psychiatrist." No canvassing.

C. W. RADCLIFFE, "B3," Clerk of the County Council.
Middlesex Guildhall, Westminster, S.W.1.

Borough of Ealing.

Applications are invited from duly qualified medical practitioners with a public health qualification for the position of WOMAN ASSISTANT MEDICAL OFFICER OF HEALTH.

A candidate must have had at least three years' experience in the practice of the profession. The person appointed will be required to carry out medical inspection of school-children and child welfare work, and perform such other duties as may be allotted as Assistant to the Medical Officer of Health and School Medical Officer.

The person appointed will be required to devote her whole time to the duties and will not be allowed to engage in private practice. The salary will be at the rate of £600 per annum, rising by £25 per annum to £700.

A deduction will be made from the salary in accordance with the provisions of the Local Government Officers' Superannuation Act, 1937, and the appointment will be subject to passing the Council's medical examination in connexion therewith. Canvassing will be a disqualification.

Copies of the application forms and terms of appointment can be obtained from Dr. Thomas Orr, Medical Officer of Health, Town Hall, Ealing, W.5, to whom application, accompanied by copies of not more than three recent testimonials, must be delivered not later than the 30th January, 1942.

R. H. WANKLYN, Town Clerk.
Town Hall, Ealing, W.5, 16th January, 1942.

Cheltenham General and Eye Hospitals.

(176 Beds.)
Recognised for the F.R.C.S., D.L.O., and D.O.M.S. Examinations.

The Board of Management invite applications for the post of HOUSE SURGEON (A) (Male) at the General Hospital, now vacant owing to call-up. Candidates must be of British nationality and fully qualified. Salary £150 per annum, with board, lodging, and laundry. R practitioners within three months of qualification may apply when appointment will be for a period of six months.

Applications, with copies of testimonials, to be sent in sealed envelopes marked "House Surgeon" to the undersigned as soon as possible.

J. CUMMING SMITH, F.C.I.S., F.H.O.A., Secretary.
The General Hospital, Cheltenham, 24th December, 1941.

Royal Berkshire Hospital, Reading.

Applications are invited from registered medical practitioners (Male) for the appointment of RESIDENT ANÆSTHETIST (B2), now vacant, including R practitioners who now hold A posts. The appointment is for six months. A salary of £250 per annum, with board, residence, and laundry, will be paid to the candidate possessing suitable qualifications for the post.

Applications, stating age, qualifications with dates, nationality, and present post, and accompanied by copies of three recent testimonials, should be sent to the undersigned immediately.

H. E. RYAN, Secretary and House Governor.

Assistant Medical Officer (Male or

Female) required as locum tenens. Salary £7 7s. per week, together with full board, apartments, and laundry, plus a war bonus as decided by the Visiting Committee from time to time. Experience in a hospital for nervous and mental disorders desirable but not essential. Hospital is situated 10 miles from London.

Applications, together with copies of three testimonials, should reach the MEDICAL SUPERINTENDENT not later than Friday, 30th January, 1942, WEST HAM HOSPITAL FOR NERVOUS AND MENTAL DISORDERS, GOODMAYES, ILFORD.

Assistant (B1) to Pathologist required

by LONDON COUNTY COUNCIL at CENTRAL PATHOLOGICAL LABORATORY, Mental Health Services, WEST PARK HOSPITAL, Epsom Surrey. Salary £450–£550 a year, according to qualifications and experience. Non-resident, unestablished. Medical qualifications and general pathological experience essential. Opportunity to acquire experience in histo-pathology. Suitably qualified R practitioners holding B2 or B1 posts may apply. For application form, returnable by 23rd January, send stamped addressed foolscap envelope to MEDICAL OFFICER OF HEALTH (B/A), Mental Health Services, West Park Hospital, Epsom, Surrey.

Royal Hampshire County Hospital,

WINCHESTER. (461 Beds.)

Applications are invited from registered medical practitioners, including R practitioners within three months of qualification, for the appointment of HOUSE SURGEON (A). The appointment will be for a period of six months. Salary is at the rate of £175 per annum, with full residential emoluments.

Applications, stating age, qualifications with dates, and nationality, accompanied by copies of three recent testimonials, should be sent immediately to—

H. EWART MITCHELL, Superintendent and Secretary.

The Guest Hospital, Dudley.

(The Resident Staff consists of a Resident Surgical Officer and Three House Surgeons.)

Applications are invited from registered medical practitioners, Male, for the appointment of HOUSE SURGEON (A), including R practitioners within three months of qualification when the appointment will be for a period of six months. Salary at the rate of £200 per annum, with full residential emoluments.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of three recent testimonials, should be sent to the undersigned.

H. RAYMOND HURST, House Governor and Secretary.
9th January, 1942.

Kettering and District General HOSPITAL.

APPOINTMENT OF A HOUSE PHYSICIAN (A).

Applications are invited from registered medical practitioners for the appointment of a House Physician (A), including R practitioners within three months of qualification when appointment will be for a period of six months. Salary is at the rate of £200 per annum, with full residential emoluments.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of three recent testimonials, should be sent to the undersigned as soon as possible.

G. W. JACKSON, Secretary-Superintendent.

Cheshire County Mental Hospital,

PARKSIDE, MACCLESFIELD.

Temporary Male ASSISTANT MEDICAL OFFICER required, single, ineligible for war service. Previous mental hospital experience not essential. Salary £8 8s. per week, with board, apartments, and laundry. Preference will be given to candidate with laboratory experience.

Applications, stating qualifications, with copies of three recent testimonials, to be sent to the MEDICAL SUPERINTENDENT, to be received as soon as possible.

Hull Corporation Health Department.

BEVERLEY ROAD INSTITUTION AND HOSPITAL.

AMENDED ADVERTISEMENT.

Applications are invited from Male registered medical practitioners for the appointment of Temporary MEDICAL OFFICER at the Beverley Road Institution and Hospital. The appointment will, in the first instance, be a temporary one, subject to review at the end of the war. Administrative experience in a Public Assistance or General Hospital essential. Salary will be at the rate of £800 per annum, together with unfurnished house.

Full particulars and forms of application may be obtained from the MEDICAL OFFICER OF HEALTH, Guildhall, Hull, and completed applications should be returned to him not later than 10 A.M. on Monday, the 26th January, 1942.

Hull Corporation Health Department.

HULL CITY HOSPITAL AND SANATORIUM.

Applications are invited for the appointment of a Temporary RESIDENT MEDICAL OFFICER (B1) at the Hull Sanatorium, Cottingham.

The appointment is open to registered medical practitioners of either sex, who must be single and have had experience in general hospital work. Possession of the Diploma in Public Health, or similar qualification, and previous experience in a sanatorium or fever hospital will be regarded as additional qualifications. Suitably qualified R practitioners holding B2 or B1 appointments are invited to apply.

The appointment is for a period of one year and the salary is £350 per annum, together with board, laundry, and residence. The appointment may be extended for more than one year, in which case the salary, subject to satisfactory service, will be increased by annual increments of £25 to a maximum of £450 per annum.

Application forms may be obtained from, and should be returned to, the MEDICAL OFFICER OF HEALTH, Guildhall, Hull, not later than Wednesday, the 28th January, 1942.

Children's Hospital, Nottingham.

Applications are invited for the post of HOUSE PHYSICIAN AND CASUALTY OFFICER (B2) (Woman). There are two other Residents and the duties will include some surgical ward work. Experience in anæsthetics desirable. The salary will be at the rate of £220 per annum, with apartments, board, and laundry. The appointment will be for six months, duties to commence on the 1st March, 1942.

Applications, together with testimonials, stating age, nationality, qualifications, and experience, to be sent to the HONORARY SECRETARY, 1, King John's Chambers, Bridlesmith Gate, Nottingham, on or before Tuesday, 20th January, 1942. Selected candidates will be required to attend at the Hospital for a personal interview.

North Staffordshire Royal Infirmary,

STOKE-ON-TRENT. (472 Beds.)

Applications are invited from registered medical practitioners for the appointment of RESIDENT ORTHOPÆDIC OFFICER (B1), which will shortly become vacant. Applicants should have had previous experience and be suitably qualified R practitioners holding B2 or B1 appointments. Preference will be given to candidates holding the Fellowship Diploma of one of the Royal Colleges of Surgeons. The Orthopædic Department serves a large industrial district and the post offers exceptional experience in traumatic surgery. The appointment will be for a period of one year in the first instance. Salary is at the rate of £350 per annum, with full residential emoluments.

Applications, stating age, qualifications with dates, nationality, and present post, and accompanied by copies of three recent testimonials, should be sent to the undersigned as soon as possible.

THORNBURROW GIBSON, Secretary and House Governor.

North Riding of Yorkshire County COUNCIL.

NORTHALLERTON HOSPITAL. (640 Beds.)

Applications are invited from registered medical practitioners for the post of RESIDENT SURGICAL OFFICER (B1) at the above-named Hospital. The appointment will be terminable by one month's notice on either side. Salary £350 per annum, with full residential emoluments. Suitably qualified R practitioners holding B2 or B1 posts may apply.

Applications, stating age, nationality, qualifications, date when at liberty, recent experience of surgical work, and accompanied by copies of not less than two recent testimonials, should be sent as soon as possible to the undersigned.

H. G. THORNLEY, Clerk of the County Council.

County Hall, Northallerton, Yorks, 5th January, 1942.

Montagu Hospital, Mexborough.

Applications are invited for the combined post of RESIDENT HOUSE PHYSICIAN AND OBSTETRIC OFFICER (A post) (Lady). Commencing salary £150 per annum, with the usual residential emoluments. The appointment is for six months and is renewable.

Applications, stating age, nationality, qualifications, and experience, accompanied with copy testimonials, to be sent to the undersigned immediately.

A. LAYCOCK, Secretary-Superintendent.

Pontefract General Infirmary

AND THE HYDES HOSPITAL. (112 Beds.)

Applications are invited from registered medical practitioners, Male, for the appointment of a HOUSE SURGEON (A), to become vacant immediately, including R practitioners within three months of qualification when appointment will be for a period of six months. Salary £150 per annum, with full residential emoluments.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of three recent testimonials, should be sent to the undersigned.

D. J. RICHARDS, Secretary-Superintendent.

Bedford County Hospital.

Applications are invited from registered medical practitioners, Male and Female, for the appointment of a HOUSE SURGEON (A post), to become vacant the middle of January, including R practitioners within three months of qualification when appointment will be for a period of six months. Salary is at the rate of £150 per annum, with full residential emoluments.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of three recent testimonials, should be sent to the SECRETARY, Honorary Medical Staff Committee, as soon as possible.

Chelmsford and Essex Hospital,

London-road, CHELMSFORD, ESSEX.

(235 Beds.)

Applications are invited for the post of CASUALTY OFFICER AND RESIDENT ANÆSTHETIST (A), Male or Female. R practitioners within three months of qualification may apply, when appointment will be for a period of six months. Salary £150 per annum, plus board, lodging, and laundry.

Apply, with recent testimonials, to the undersigned immediately. R. G. MORRISH, House Governor and Secretary.

Royal United Hospital, Bath.

Applications are invited from registered Male medical practitioners for the following resident appointment which becomes vacant on 1st February, 1942: HOUSE SURGEON (A) (Gynæcology, Obstetrics, and Anæsthetics). Salary at the rate of £150 per annum, with board, residence, and laundry. R practitioners within three months of qualification may apply when appointment will be for six months.

Applications, stating age, qualifications, experience, together with a copy of three testimonials, to be addressed to the undersigned immediately.

J. LAWRENCE MEARS, Secretary-Superintendent.

6th January, 1942.

East Suffolk and Ipswich Hospital.

(407 Beds—8 Residents.)

Applications are invited from registered medical practitioners (Male or Female), including R practitioners within three months of qualification, for the appointment of HOUSE SURGEON (A). The appointment is for six months from 1st February. The salary at the rate of £144 per annum, with full residential emoluments.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of three recent testimonials, to be sent to the undersigned.

The Hospital, Ipswich. ARTHUR GRIFFITHS, Secretary.

Walsall General Hospital.

(181 Beds.)

Applications are invited from registered medical practitioners for the appointment of a HOUSE SURGEON (A), vacant on the 14th January, 1942, including R practitioners within three months of qualification. The appointment will be for a period of six months. Salary at the rate of £150 per annum, with full residential emoluments.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of three recent testimonials, should reach the undersigned as soon as possible.

R. C. MILLWARD, House Governor.

Walsall General Hospital.

Applications are invited from registered medical practitioners for the appointment of a HOUSE PHYSICIAN (A), to become vacant on the 1st March, 1942, including R practitioners within three months of qualification. The appointment will be for a period of six months. Salary at the rate of £150 per annum, with full residential emoluments.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of three recent testimonials, should be forwarded to the undersigned not later than the 31st January, 1942.

R. C. MILLWARD, House Governor.

Lincoln County Hospital.

Applications are invited from registered medical practitioners (Male, unmarried), including R practitioners within three months of qualification, for the appointment of HOUSE SURGEON (A). The appointment is for six months. Salary is at the rate of £150 per annum, with full residential emoluments.

Applications, stating age, nationality, medical school, and qualifications with dates, and accompanied by copies of three recent testimonials, should be sent to the undersigned.

ARTHUR MOORE, Secretary-Superintendent.

Lincoln, 3rd January, 1942.

Essex County Council.

PUBLIC HEALTH DEPARTMENT.

Applications are invited from registered medical practitioners possessing experience of administrative work for the undermentioned posts on the central staff of the Council's Public Health Department:—

1. SENIOR MEDICAL OFFICER.—The duties of this officer will be concerned mainly with the administration of hospitals, sanatoria, public assistance establishments, and the tuberculosis services of the Council.

2. SENIOR MEDICAL OFFICER.—The duties of this officer will be chiefly those relative to the administration of the Council's school medical services.

3. SENIOR MEDICAL OFFICER.—The duties of this officer will relate, in the main, to the administration of the Council's maternity and child welfare, midwifery, and mental deficiency services. The post is a temporary one.

The salary scale attaching to each of the posts is one at the rate of £750 a year, rising by annual increments of £25 to £937 10s. a year. The commencing salary will in each case be fixed, having regard to the experience and capabilities of the candidate appointed.

4 and 5. TWO MEDICAL OFFICERS, one at a salary at the rate of £750 a year, and the other at a salary at the rate of £650 a year. These officers are required to assist in the administration of the medical aspects of the Council's Civil Defence services. These are temporary posts.

Forms of application may be obtained from the undersigned to whom they should be returned completed, accompanied by copies of three recent testimonials, and in envelopes endorsed with the name and number (as given above) of the post sought, not later than the 2nd February, 1942.

Canvassing, whether directly or indirectly, is forbidden.

JOHN E. LIGHTBURN, Clerk of the County Council.

County Hall, Chelmsford, 9th January, 1942.

City of Leicester.

EDUCATION COMMITTEE.

APPOINTMENT OF AN ASSISTANT SCHOOL MEDICAL OFFICER.

The Committee invite applications for the above post to carry out duties in connexion with the School Medical Service in the City of Leicester.

The person appointed will be required to devote his whole time to the duties of the office.

Salary according to scale, viz., minimum £500 per annum, increasing by annual increments of £25 to a maximum of £700. If the officer appointed has served previously under a local authority such service will be taken into account in determining his commencing salary.

The appointment will be subject to the provisions of the Local Government Superannuation Act, 1937, and in this connexion the candidate appointed must pass an examination by the Committee's Medical Officer.

Application should be made by letter, accompanied by copies of not more than three recent testimonials, not later than the 28th January, 1942, to H. S. MAGNAY, Director of Education.

Education Department, Newarke-street, Leicester,
9th January, 1942.

City of Leeds.

Applications are invited from qualified and registered medical practitioners for the post of ASSISTANT MEDICAL OFFICER for Maternity and Child Welfare. Applicants must have had not less than three years' post-graduate experience, including experience in General Medicine and Surgery, and special experience in obstetrics and ante-natal work, and in the treatment of Children's Diseases and Diseases of Women. Preference will be given to candidates possessing the D.P.H.

The commencing salary for the post will be £500 per annum, and the present Grading Scheme of the Corporation provides for annual increments of £25, to a maximum of £700.

The person appointed will be required to pass a medical examination, and to contribute to the Superannuation Fund established under the Local Government Superannuation Act, 1937. The appointment will be terminable by one month's notice on either side.

Form of application and particulars as to the duties of the appointment may be obtained from the undersigned.

Applications, endorsed "Maternity and Child Welfare Officer," together with copies of three recent testimonials, must be delivered at the Health Department, 12, Market-buildings, Vicar-lane, Leeds, 1, not later than 10 A.M. on Monday, February 2nd, 1942.

Canvassing in any form, either directly or indirectly, will be a disqualification.

J. JOHNSTONE JERVIS, Medical Officer of Health.

Huddersfield Royal Infirmary.

(321 Beds.)

Male HOUSE SURGEON (A) required to be attached to the ABNORMAL MATERNITY DEPARTMENT. Duties, which include the administration of anæsthetics, to commence on 12th February, 1942. Salary will be at the rate of £150 per annum, with board, residence, and laundry. Appointment for six months, subject to renewal for a similar period. R practitioners within three months of qualification may apply when appointment will be for a period of six months.

Applications, with copies of three recent testimonials, to be addressed immediately to—

H. J. JOHNSON, General Superintendent and Secretary.

Royal Manchester Children's Hospital,

PENDLEBURY, Near MANCHESTER.

Applications are invited for the post of RESIDENT MEDICAL OFFICER (B1). Salary £150 per annum. The appointment is for a period of six months commencing 1st March, 1942. Suitably qualified R practitioners holding B2 or B1 appointments are invited to apply.

Applications, stating age, and accompanied by copies of not more than three recent testimonials, to be sent to the undersigned not later than Wednesday, 28th January, 1942. Canvassing, directly or indirectly, may disqualify.

By Order,

H. HEARDMAN, General Superintendent and Secretary.

Royal Manchester Children's Hospital,

PENDLEBURY.

Applications are invited from registered medical practitioners, Male and Female (including R practitioners within three months of qualification), for the appointment of HOUSE SURGEON (A), to become vacant on 1st March. The appointment is for a period of six months, and the salary is at the rate of £100 per annum, with full residential emoluments.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of three recent testimonials, to be sent to the undersigned not later than Wednesday, 28th January, 1942.

By Order,

H. HEARDMAN, General Superintendent and Secretary.

Royal Manchester Children's Hospital,

PENDLEBURY.

Applications are invited from registered medical practitioners, Male and Female (including R practitioners within three months of qualification), for the post of ASSISTANT MEDICAL OFFICER (A) at the OUT-PATIENTS' DEPARTMENT, Gartside-street, Manchester, to become vacant on 1st March next. The appointment will be for a period of six months, and the salary is at the rate of £150 per annum. The hours of duty at the Out-patients' Department are from 9 A.M. until 1 P.M., or until the work of the department is finished. Preference will be given to candidates able to take up residence at the Hospital, Pendlebury, for evening relief duties.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of three recent testimonials, should be sent to the undersigned not later than Wednesday, 28th January, 1942.

By Order,

H. HEARDMAN, General Superintendent and Secretary.

The Royal Liverpool United Hospital.

DAVID LEWIS NORTHERN HOSPITAL.

Applications are invited from registered medical practitioners for the appointment of RESIDENT SURGICAL OFFICER (B1), duties to commence immediately. Applicants should have held house appointments and had surgical experience. Preference will be given to candidates holding Diploma of F.R.C.S. Suitably qualified R practitioners holding B2 or B1 appointments are invited to apply. Salary is at the rate of £350 per annum.

Applications, stating age, nationality, qualifications, with experience and details of previous appointments, and (except in the case of students of the Liverpool Medical School) accompanied by copies of three recent testimonials, should be sent not later than Wednesday, 28th January, 1942, to

A. V. J. HINDS, Secretary.

The Royal Liverpool United Hospital,
60, Rodney-street, Liverpool, 1.
17th January, 1942.

Hampshire County Council.

COUNTY COUNCIL HOSPITAL, ALVERSTOKE, GOSPORT. (60 Beds.)

Applications are invited from registered medical practitioners for the appointment of RESIDENT SURGICAL OFFICER (B1) now vacant. Applicants should have held house appointments and had surgical experience. Preference will be given to candidates holding Diploma of F.R.C.S. Salary is at the rate of £550 per annum with one month's notice on either side. Suitably qualified R practitioners holding B2 or B1 posts may apply.

Applications, stating age, nationality, qualifications with dates, experience and details of previous appointments, and accompanied by copies of three recent testimonials, should be sent not later than Monday, 9th February, 1942, to—

H. LESLIE CRONK, County Medical Officer.

The Castle, Winchester.

Royal West Sussex Hospital,

CHICHESTER. (334 Beds.)

Applications are invited from registered medical practitioners, including R practitioners holding A posts, for the appointment of RESIDENT MEDICAL OFFICER (B2), vacant on 26th January next. The appointment is for six months. Salary £225 per annum, with full residential emoluments.

Applications, stating age, qualifications with dates, nationality, and present post, together with copies of three recent testimonials, should be sent immediately to—

K. H. WILLIAMS, House Governor and Secretary.

Ronkswood Hospital,
New Town-road, WORCESTER.

Applications are invited from registered medical practitioners, Male or Female, for the following appointments, as from the 18th February, 1942, to the above-named Hospital, which is being managed by the Ministry of Pensions:—

HOUSE SURGEONS (B2). R practitioners who now hold A posts may apply when appointment will be limited to six months. Salaries £200–£300 per annum, according to experience.

HOUSE SURGEONS (A). R practitioners within three months of qualification may apply when appointment will be for a period of six months. Salaries £120–£190 per annum, according to experience.

Free board and lodging, or £100 per annum in lieu, will be provided.

Applications, stating age, qualifications with dates, and nationality, accompanied by copies of three recent testimonials, should be addressed to the SECRETARY, Establishment Division, Ministry of Pensions, Norcross, Blackpool, Lancs.

Canvassing through Members of Parliament or in other ways will render a candidate liable to disqualification.

Wolverhampton and Midland Counties
EYE INFIRMARY.

Applications are invited from registered medical practitioners, Male and Female, for the appointment of HOUSE SURGEON (B2), with Ophthalmic experience preferred, to become vacant about the 8th February, 1942, including R practitioners who now hold A posts when appointment would be limited to six months. The salary is at the rate of £200 per annum, with full residential emoluments.

Applications, stating age, experience, qualifications with dates, nationality, and present post, and accompanied by copies of three recent testimonials, should be sent to the undersigned not later than 27th January.

There are 54 Beds for in-patients and large out-patient department. The Infirmary is recognised as a hospital at which a full course of instruction for admission to the D.O.M.S. may be taken. EUSTACE LEES, Secretary.

Addenbrooke's Hospital, Cambridge.

Applications are invited for the following appointments from registered medical practitioners, Male and Female (unmarried):—

(*a*) HOUSE SURGEON (A). Vacant on 1st March, 1942.
(*b*) RESIDENT ANÆSTHETIST (A). Vacant on 19th March, 1942.
(*c*) RESIDENT ANÆSTHETIST (A), at the LEYS SCHOOL ANNEXE. Vacant on 19th March, 1942.

R practitioners within three months of qualification may apply. The appointments will be for a period of six months but terminable at an earlier date by one month's notice on either side. Salary in each case is at the rate of £130 per annum, with full residential emoluments.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of three recent testimonials, should be sent not later than Wednesday, 28th January, 1942, to: J. A. BEARDSALL, Secretary-Superintendent.

Chorley and District Hospital,
CHORLEY, LANCS.
(Voluntary General Hospital with 100 Beds.)

Applications are invited from registered medical practitioners, Male and Female, for the appointment of HOUSE SURGEON (A), to commence duty in February next. R practitioners within three months of qualification may apply when appointment will be for a period of six months; otherwise the appointment is renewable for a further period. Salary £150 per annum.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of three recent testimonials, should be sent immediately to—
C. H. SPENCE, Secretary-Superintendent.

The Royal Sheffield Infirmary and
HOSPITAL.
THE ROYAL HOSPITAL, SHEFFIELD.

Applications are invited from registered medical practitioners, Male and Female, for the resident posts of OPHTHALMIC HOUSE SURGEON (A) (salary £120 per annum) and ASSISTANT CASUALTY OFFICER (A) (salary £80 per annum). R practitioners within three months of qualification may apply when appointments will be for a period of six months.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of three recent testimonials, should be sent immediately to—
W. H. BOOTH, Superintendent.

Surrey County Council.

LOCUM TENENS MEDICAL OFFICER (A) required, Male or Female, in Mental Hospital Service. Salary seven guineas per week, with full residential emoluments. Candidates need not be experienced in Psychiatry. There is good opportunity for gaining knowledge of the modern treatments of mental illness. R practitioners within three months of qualification may apply, when appointment will be for a period of six months.

Applications should be made, with details of experience, &c., to the MEDICAL SUPERINTENDENT, Netherne Hospital, Coulsdon.

City of Stoke-on-Trent Education
COMMITTEE.

Applications are invited from fully qualified and registered medical practitioners for the post of TEMPORARY ASSISTANT SCHOOL MEDICAL OFFICER. Salary scale: £500 to £700 per annum by annual increments of £25, subject to satisfactory service. A car allowance is made. The successful candidate will be required to devote the whole of his (her) time to the duties of the office and work under the immediate direction of the Senior School Medical Officer. The duties will consist of routine medical inspection and school clinic work. A knowledge of dietetics will be considered an additional qualification. The appointment is subject to one month's notice on either side to terminate the engagement. Canvassing will be considered a disqualification.

Forms of application may be obtained from the undersigned on receipt of a stamped addressed foolscap envelope, and completed forms should be submitted not later than the 6th February, 1942. Envelopes should be endorsed "Appointment of Temporary Assistant S.M.O."

J. F. CARR, Director of Education.
Education Offices, Town Hall, Hanley, Stoke-on-Trent.

East Suffolk and Ipswich Hospital.
(407 Beds and 8 Residents.)

Applications are invited from registered medical practitioners (Male or Female) for the following appointments:—

HOUSE SURGEON (A). Vacant 1st February.
HOUSE SURGEON (A) (EAR, NOSE, THROAT, AND OPHTHALMIC DEPARTMENTS). Vacant 18th February. This post is a recognised one for postgraduate study for diplomas of D.L.O. and D.O.M.S.

The above are open to R practitioners within three months of qualification.

HOUSE SURGEON (B2). Vacant 14th February.
HOUSE SURGEON (B2) (ORTHOPÆDIC AND FRACTURE DEPARTMENT). Vacant 1st March.

The above are open to R practitioners holding A posts.

The appointments are for six months. Salary at the rate of £144 per annum, with full residential emoluments.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of three recent testimonials, to be sent to—
Hospital, Ipswich. A. GRIFFITHS.

Preston and County of Lancaster Royal
INFIRMARY.
(General Hospital—404 Normal Beds.)

Applications are invited for the following resident appointments:—

HOUSE SURGEON (A). R practitioners within three months of qualification may apply when appointment will be for a period of six months. Salary £150 per annum, with usual residential allowances.

SENIOR HOUSE SURGEON (B2). R practitioners who now hold A posts may apply when appointment will be limited to six months. Salary at the rate of £175 per annum, with usual residential allowances.

Applications, stating age, qualifications with dates, and nationality, accompanied by testimonials, should be sent to—
Royal Infirmary, Preston. JOHN GIBSON, Secretary.

The Stockport Infirmary.

Applications are invited from unmarried registered medical practitioners, Male or Female, for the appointment of HOUSE SURGEON (A) (Aural, Ophthalmic, and Gynæcological), including R practitioners within three months of qualification when appointment will be for a period of six months. Salary at the rate of £150 per annum, with full residential emoluments.

Applications, stating age, qualifications with dates, and nationality, accompanied by copies of three recent testimonials, should be sent to the undersigned forthwith. Duties should commence 1st February.

H. G. PRICE, Secretary-Superintendent.

The Southampton Children's Hospital
AND DISPENSARY FOR WOMEN.

Applications are invited from registered medical practitioners, Female, for the appointment of a RESIDENT MEDICAL OFFICER (A), to become vacant on the 28th February. Salary is at the rate of £150 per annum, with full residential emoluments.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of three recent testimonials, should be sent not later than the 5th February to—
ELLA K. MATTHEWS, Secretary.

Summersdale Hospital, Graylingwell,
CHICHESTER.

Applications are invited from registered medical practitioners, Male or Female, for the appointment of a HOUSE SURGEON (A), to become vacant immediately. Salary is at the rate of £120 per annum, with full residential emoluments. R practitioners within three months of qualification may apply when appointment will be for a period of six months.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of three recent testimonials, should be sent to the MEDICAL SUPERINTENDENT as soon as possible.

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Lancashire County Council.

The Lancashire County Council propose to appoint a whole-time Temporary ASSISTANT COUNTY MEDICAL OFFICER (Male or Female) and invite applications from registered medical practitioners who should possess a Diploma in Public Health.

The duties of the post include the medical inspection of school-children, maternity and child welfare work, general public health work, and such other duties as may from time to time be imposed by the County Council.

The salary will be at the rate of £800 per annum, together with allowances for travelling, &c.

Applications must be made upon a form which can be obtained, together with further particulars, from the County Medical Officer of Health, School Medical and Child Welfare Department, County Offices, Preston, to whom the completed form should be returned not later than the 31st January, 1942. All communications must be endorsed "Assistant County Medical Officer."

Any form of canvassing is strictly forbidden and will disqualify.

GEORGE ETHERTON, Clerk of the County Council.

County Offices, Preston, January, 1942.

Lancashire County Council.

The Lancashire County Council propose to appoint a whole-time Temporary DENTAL SURGEON (Male or Female) and invite applications from fully qualified and registered dental surgeons.

The duties of the post include the dental inspection and treatment of school-children, work under the maternity and child welfare scheme, and such other duties as may from time to time be imposed by the County Council.

The salary will be at the rate of £550 per annum, together with allowances for travelling, &c.

Applications must be made upon a form which can be obtained from the County Medical Officer of Health, School Medical and Child Welfare Department, County Offices, Preston, to whom the completed form should be returned not later than the 31st January, 1942. All communications must be endorsed "Dental Surgeon."

Canvassing is strictly forbidden and will disqualify.

GEORGE ETHERTON, Clerk of the County Council.

County Offices, Preston.

The Radcliffe Infirmary, Oxford.

Applications are invited from registered medical practitioners for the appointment of RESIDENT SURGICAL OFFICER (B1), which will become vacant on the 1st March, 1942. Applicants should have held house appointments and had surgical experience, and should possess the qualification of F.R.C.S. Suitably qualified R practitioners holding B2 or B1 appointments are invited to apply. Salary is at the rate of £300 to £500 per annum, with residence, according to experience.

Further particulars of the post may be obtained from the undersigned, to whom applications, stating age, nationality, qualifications with dates, experience, and details of previous appointments, and accompanied by four copies of three recent testimonials, should be sent not later than Saturday, the 31st January, 1942.

January, 1942. A. G. E. SANCTUARY, Administrator.

The Jessop Hospital for Women, SHEFFIELD.

Applications are invited from registered medical practitioners, Male and Female, for the appointment of HOUSE SURGEON (B2), now vacant, including R practitioners who now hold A posts when appointment will be limited to six months. The salary is at the rate of £100 per annum, with full residential emoluments. Membership of a Medical Defence Society is a condition of appointment.

Applications, stating age, qualifications with dates, nationality, and present post, and accompanied by copies of three recent testimonials, should be sent immediately to—

DAVID OSWALD, Superintendent and Secretary.

Royal Infirmary, Bradford.

Applications are invited from registered medical practitioners (Male) for the following appointments: Four HOUSE SURGEONS (A), including R practitioners within three months of qualification, and One HOUSE SURGEON (B2), including R practitioners who now hold A posts, to become vacant on 28th February. Six months' appointments. Salary £150 per annum, with board, residence, and laundry. There are 345 Beds and 10 Resident Officers.

Applications, stating age, nationality, qualifications, and previous experience, with copies of three recent testimonials, should be sent not later than first post on 2nd February to—

H. TRUSSON, House Governor and Secretary.

7th January, 1942.

The Royal Hospital, Wolverhampton.

(Incorporated under Royal Charter.)
(310 Beds.)

Applications are invited for the post of RESIDENT SURGICAL OFFICER (B1). Salary £250 per annum. Experience in major surgery essential. The successful candidate must hold one of the higher qualifications in Surgery. Suitably qualified R practitioners holding B2 or B1 posts may apply.

Applications, with copies of testimonials, to be forwarded forthwith to— W. H. HARPER, House Governor.

The Prince of Wales's Hospital, Greenbank-road, PLYMOUTH.

Applications are invited from registered medical practitioners for the appointment of a JUNIOR HOUSE SURGEON (A) for duty at the Devonport Section, vacant 2nd March, including R practitioners within three months of qualification when appointment will be for a period of six months. Salary is at the rate of £132 per annum, with full residential emoluments.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of three recent testimonials, should be sent not later than 2nd February to—

ARTHUR R. CASH, General Superintendent.

6th January, 1942.

Cancer Act, 1939.

LINCOLNSHIRE JOINT CANCER COMMITTEE.

The Committee invite applications for the post of DIRECTOR OF RADIOTHERAPY. He will have charge of the Cancer Treatment Centre to be established by the Committee at the Scunthorpe and District War Memorial Hospital for the treatment of cases of cancer from Lincolnshire.

Forty in-patient Beds are provided at the Hospital, and the Director will be required to hold out-patient clinics at other hospitals in the County and to advise the Committee generally.

The commencing salary will be £1200 per annum.

For further particulars of the duties and for forms of application apply to: ERIC W. SCORER, Clerk of the Joint Committee.

County Offices, Lincoln.

Halifax General Hospital.

(A1—400 Beds.)

RESIDENT MEDICAL OFFICER (A).

Applications are invited from registered medical practitioners, Male and Female, for the above appointment, including R practitioners within three months of qualification when appointment will be limited to six months. The duties will be mainly surgical. Salary is at the rate of £150–£250 per annum, according to experience, with full residential emoluments.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of three recent testimonials, should be sent as soon as possible to the MEDICAL SUPERINTENDENT.

General Hospital, Halifax.

Lincoln General Dispensary.

Wanted, a MEDICAL OFFICER, Male or Female. Candidates must be qualified to practise medicine and surgery and be duly registered. Salary £500 per annum. The duties are to attend the patients in their own homes in the City of Lincoln and suburbs and to prescribe for such patients. About 90 per cent. of the patients are women and children. A Dispenser and Nurse are provided. The person appointed will be required to enter upon the duties on the 30th March, 1942. The appointment will be subject to three months' notice on either side.

Applications, stating age, with copies of three recent testimonials (which will not be returned), are to be sent on or before the 16th February, 1942, to: C. E. HAYLOCK, Secretary.

2, Bank-street, Lincoln, 8th January, 1942.

The Bolton Royal Infirmary.

(242 Beds.)

Applications are invited from registered medical practitioners, Male and Female, for the appointment of HOUSE SURGEON (A), to become vacant on 10th February, 1942, including R practitioners within three months of qualification. Appointment is for a period of six months. Salary £150 per annum, with full residential emoluments.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of three recent testimonials, should be sent immediately to—

H. AUBREY FROGGATT, Superintendent-Secretary.

Worthing Hospital.

Applications are invited for the temporary post of ASSISTANT MEDICAL OFFICER to the DEPARTMENT OF PHYSICAL MEDICINE. Particulars of the appointment can be obtained from the House Governor, Worthing Hospital.

Applications and copies of testimonials should be sent not later than Friday, 23rd January, 1942, to—

A. V. OAKTON, House Governor.

Male Locum wanted, Mixed Practice.

London Suburb, good salary. R.C. preferred.—Address, No. 842, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

Wanted by fully qualified and experienced Lady Dispenser full-time post, either with Doctors or in Hospital; knowledge of book-keeping and typing if required. Please state terms.—Address, No. 840, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

Medical Secretary-Receptionist, well experienced, highly educated and recommended, seeks position, preferably in London. Viennese.—Address, No. 841, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

BYNIN AMARA

In Convalescence from Influenza the characteristically profound lassitude and the low blood-pressure are likely to be accompanied by diminution of the capacity for digesting food and by slight anæmia.

For the speedily effective treatment of these disturbances BYNIN AMARA is most useful. It contains quinine phosphate, iron phosphate, and alkaloids of nux vomica, in Bynin Liquid Malt.

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